

A PHONETIC AND PHONOLOGICAL STUDY OF THE USE OF PITCH
AND OTHER ASSOCIATED FEATURES IN PANJABI (DOABI).

Thesis submitted for the degree of
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in the University of London

by

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ABSTRACT

After the acknowledgements and contents, the introductory Chapter gives some details about the language and area, including an account of the previous work done, approach being adopted (prosodic) and also the symbols used to represent speech-sounds and pitch.

The second chapter is an account of the two major linguistic uses of pitch, i.e., tone and intonation. A statement of three-term tone system is followed by a detailed discussion, with examples, of the two intonation systems, set up for the final and non-final Panjabi clauses respectively, each having a number of terms.

Emphasis, emphatic sentences and main acoustic correlates of emphasis, namely, duration, intensity and pitch discussed in some detail and supported by instrumental evidence form the main body of ^{the} third Chapter followed by the examples of sentences with one emphatic word in different positions.

In the remaining three Chapters various exponents of each of the three terms of the tonal system are discussed in some detail. Pitch-feature exponents are stated in Chapter four and an attempt is made to account for the variation in pitch-exponency. Chapter five furnishes a

short account of the phonation features as exponents of the different tones. Word-initial and word-final features as exponents and also as criteria are discussed in Chapter six.

The thesis concludes with a bibliography and three appendices which include instrumental evidence apart from the examples of non-emphatic clauses and tables incorporating actual measurements of duration, intensity and pitch.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTORY

1.0 The primary aim of this thesis is to make a phonetic and phonological study of the use of pitch and other associated features in Panjabi-Doabi dialect. This particular dialect under study is known as such because it is spoken by the people of Doaba area of the state of Panjab in India. Jullundur Doab was the full name given to this area in the Raj days. The rivers Sutlej and Beas form the two boundaries of Doaba which was also termed Doaba-Bist-Jullundur. Now, after the recent reorganisation of Panjab on the linguistic basis, Doabi is mainly spoken by the inhabitants of Hoshiarpur, Jullundur and Kapurthala districts. The number of Doabi speakers is about twenty lakhs. A large section of the Panjabi immigrants in the U.K. belongs to the Doabi area.

 The rate of literacy in this particular part of India is very high. In addition to a large number of High and Higher Secondary schools for boys and girls, there are about thirty Post-Graduate Arts and Training Colleges in the area. In the recent years the number of small as well as large industrial establishments has enormously grown. Thus this dialect is under the strain of a very rapidly changing shape of society which is becoming highly complex.

1.1 The dialect under review is the Colloquial Doabi of Phagwara sub-division and the study is based mainly on my own speech. Only in cases of doubt I have consulted my elder brother Mr. H.S. Joshi, a teacher in Bedford these days, and also my wife. Both belong to the same area and have Doabi as their mother-tongue. I belong to the village of Bhanoki, only two miles away from Phagwara. Since my early childhood a close contact with the urban life of Phagwara has continuously been maintained. I was educated at Phagwara right from the Primary stages to my Post-Graduate Teachers' Training. Then I shifted to Delhi, where I spent about three years doing my Master's degree and also teaching at the same time. Until I left for U.K., I was working at Phagwara, teaching in the college and working part-time for an English-language daily. A highly literary atmosphere in the family, my own education, and possibly the nature of my profession may, thus, have affected my way of pronouncing particular words, and my vocabulary too. My idiolect draws its vocabulary on both rural and urban forms of Doabi.

1.2 Doabi was never used as the language of literature, perhaps because of political reasons or otherwise. I have come across only one book written in the late 19th. century, where one can find a sample of the dialect spoken at that period of time. The aim of this book was to help the Raj officers to learn to speak the different dialects of Panjabi

and also to understand the life, customs and culture of the people. This book is in the Gurmukhi script, which is used for writing Doabi. In his Linguistic Survey of India Vol. IX, Pt. II, Sir George Grierson has given a sample of Doabi on pages 672-75. This sample represents the dialect of Hoshiarpur district. In personal correspondence, the people of the area use Doabi, mostly in the Gurmukhi script.

1.3 Some work has already been done on the study of tones in Panjabi. The work was initiated by Dr. T. Grahame Bailey in 1913 when his Panjabi Phonetic Reader was published from London. He gave a description of the dialect of Panjabi spoken in Wazirabad in this book. "Variations in the tone of the voice form a very remarkable feature of Panjabi pronunciation", he says. "There are two special tones, apart from the ordinary tone of speaking. They occur in stressed syllables only", he adds. Mohan Singh Dewana (Panjabi Language and Prosody, Lahore, 1933), Banarsi Dass Jain (A Phonology of Punjabi and a Ludhiani Phonetic Reader, Lahore, 1934), and Bansi Lal Gupta carried on and contributed their own shares towards the furtherance of the study. The most remarkable and noteworthy contribution in the fifties was the paper "Tones in Punjabi" which appeared in Indian Linguistics Vol. 17, 1957 pp. 139-47. In this paper Kali Charan Bahl, of Poona, presented a description of the tonal system of the dialect of Amritsar city. But none of the

above mentioned scholars discussed "tonal variation in context." Harjeet Singh Gill contributed two papers in 1958 which were read before the Linguistic Society of India in the months of March and November respectively. Then, in 1960, in Volume 2, No. 6 of the *Anthropological Linguistics*, pp. 11-18, appeared his paper Panjabi Tonemics in which he studied "some of the numerous variations of the tonal contours in different environments, taking the sentence as the basic unit of study". Colloquial Majhi of Amritsar is the dialect he studied. In his latest work, "A Reference Grammar of Panjabi" (1963), he together with H.A. Gleason, has included some of his previous work.

1.4 As is quite evident from the foregoing account, no work has so far been done on the Doabi dialect of the Panjabi language. Moreover, none of the scholars mentioned before, used the polysystemic prosodic approach originated by J.R. Firth (*Sounds and Prosodies*, TPS 1948, pp. 127-52), to study the function of pitch in any dialect of Panjabi. Bahl, and Gill and Gleason, all followed the phoneme theory.

Phonemic analysis concentrates on the paradigmatic relation of contrast in a given environment and on the serial treatment of the phonetic data; as far as possible all relevant phonetic features are assigned to phonemes occupying definite places in a linear succession of phonemes. Pitch and stress phonemes are distinguished from consonant and

vowel phonemes as being suprasegmental, but relative to each other they are block-like units with definite segmental domains, usually syllables. (Robins (1964) Survey).

Prosodic analysis, on the other hand, abandons a transcriptionally oriented and essentially unidimensional treatment of utterances and takes into account both the syntagmatic and paradigmatic dimensions in which features may be assigned to distinctive phonological elements relative to each other in ways not exclusively serial. The prosodic approach is thus a polysystemic approach as opposed to the monosystemic approach of phonemic analysis.

In his article, 'A Tonal analysis of the disyllabic noun in the Machame dialect of Chaga', BSOAS XVI, 1 (1954) 157-69, A.E. Sharp says,

'It is instructive to compare the present approach with that of "tonemics", which derives much of its technique from the assumption that a "tone language" is "a language having lexically significant, contrastive, but relative pitch on each syllable". By a monosystemic method, tonemics, which takes the syllable as the essential recurrent element of all utterances and treats all syllables as equipollent for the purpose of analysis, achieves (as does its sister methodology "phonemics") what is essentially an overall reading transcription best adapted for the recording of individual texts..... Outside the essentially practical field of textual transcription, such a monosystemic syllable-by-syllable method is unsatisfactory for various reasons. One of these is that for any syllabic there is assumed to be a commutation system congruent with that of every other syllabic, so that the whole statement comes to be based on the commutation system with the greatest number of terms, and takes no account

of the different meaning of homomorphous terms in incongruent systems'.

He further states that, "A polysystemic approach to linguistic analysis, on the other hand, does not attempt to measure everything by the same yardstick. It assumes inter-alia that such grammatically recurrent elements as the morpheme or word may just as profitably be subjected to systemic analysis as such phonologically recurrent elements as the syllable".

1.5 The present approach to the problem of the use of pitch in the Doabi dialect of Panjabi language is 'prosodic', as it is generally called. The examples studied are not exclusively in citation form. Short multi-verbal sentences to illustrate different terms of intonation systems as well as differing exponents of each of the tones in the tonal system have been given. This has been supported by Pitch-meter readings¹ of the lexically same sentences with differing intonations and differing emphasis for each word. Monosyllabic as well as polysyllabic words have been incorporated in the general discussion of each term of the tonal system.

1. Tonograms (See pp.120-22)

1.6 List of the symbols used for the Panjabi Speech Sounds:-

1. VOCALIC

i	Close front unrounded long.
I	Between close and half-close unrounded and somewhat centralized short.
e	Half-close front unrounded long.
ɛ	Half-open front unrounded long.
a	Open front unrounded long.
ə	Half-open central unrounded short.
ɔ	open back rounded long.
O	Half-close back rounded long.
U	Between close and half-close rounded and somewhat centralized short.
u	Close back rounded long.

2. CONSONANTALS

		voiceless unaspirated	voiceless aspirated	voiced
PLOSIVE SOUNDS	Bilabial	p	ph	b
	Dental	t	th	d
	Retroflex	ʈ	ʈh	ɖ
	Velar	k	kh	g
	Alveolo-palatal affricates	c	ch	j










CONSONANTALS		voiceless unaspirated	voiceless aspirated	voiced
LATE- RAIALS	Dental			l
	Retroflex			ɭ
NASA- LS	Bilabial			m
	Dental			n*
	Retroflex			ɳ
	Dental-rolled- trill			r
	Retroflex-flap			ɾ
FRICA- TIVES	Dental	s		
	Alveolopalatal	ʃ		
	Glottal			h

* n followed by any plosive or affricate is homorganic.

In certain circumstances, the diagraphs ph, th, ʈh, kh and ch are fricatives.

Vocalics except I,^ə, U following nasals in word final position in Tone-2 and Tone-3 words are generally nasalised if the stress is not ultimate.

1.7 Pitch Representation.

1.	High falling pitch symbolized by		HF
2.	Low falling pitch symbolized by		LF
3.	Rising falling pitch " " "		RF
4.	High rising " " "		HR
5.	Low rising " " "		LR
6.	Falling rising " " "		FR
7.	High level " " "		H
8.	Mid level " " "		M
9.	Low level " " "		L

Note:-

One pitch mark per syllable has been used in the present study. The levels marked are not absolute but only relative and the basis is auditory perception. The quotes (' ') have been used to cover the systematic transcription employed and the symbols have already been explained. Under-lining in the approximate English rendering of the sentences and in the sentences themselves marks the emphatic word in the sentence.

CHAPTER II

USE OF PITCH

2.0 An attempt has been made in this chapter to study the various ways in which PITCH is used for linguistic purposes in the Doabi dialect of Panjabi (hereinafter referred to as Panjabi). A number of instruments have been employed to support the native speaker's intuitive feeling and perception. In addition to the Pitch-meter and the Intensity-meter, help has also been sought from the Sound Spectrograph and the Electro-aerometer.

2.1 Pitch is the acoustic result of the speed of the vibration of the vocal cords in the voiced parts of utterances. (Robins: Survey, 1964, p. 110). Carnochan (1964, p. 399) defines pitch as "a sensation, perceived by the listener and referable to a scale, as well as being related to the frequency with which the vocal cords of the speaker open and close during the utterance and which is measurable by instrumental techniques."

 We can say that: Pitch is a musical sensation. It is related to the rate of the vibration of the vocal cords of the speaker. The pitch of an utterance can be measured with the help of certain instruments in terms of frequency values of the fundamental. High frequency of the

fundamental relates to high pitch and low frequency relates to low pitch. In Panjabi speech as in other languages/^{it is}the relation of the pitch of one syllable or word to another in the sentence that is important and not the actual pitch.

2.11 Normally, a constant pitch is very rarely, if ever, maintained in talking. The pitch of the voice, on the contrary, keeps fluctuating continuously. This phenomenon of pitch fluctuation is not limited to a particular group of languages only. It is a universal phenomenon, which is found in the speech of all communities. "Pitch fluctuation, in its linguistic function, may conveniently be called speech melody. Speech melody is part of the spoken form of a language, just as much as its segments." (Abercrombie: Elements, 1967, p. 104).

When one word in a language is distinguished from another simply because of the speech melody patterns the patterns are known as TONE. The Speech melody pattern is known as INTONATION when it serves to distinguish between two otherwise identical units larger than the word, i.e., clause, sentence etc.

Some languages like Vietnamese, Chinese, Yoruba, Burmese etc., use the pitch differences to distinguish one word from another and these may be the only feature to differentiate two or more words, which are otherwise composed of the same consonant and vowel units. Pitch differences

used for the purpose aforesaid are known as tones and these languages are known as tone languages. In languages like English, French, Hindi etc., regular sequences of different pitches characterise stretches of speech between pauses and are collectively known as intonation. In these languages pitch differences are used to distinguish units larger than the word and it may be that these are the only feature to bring in a likely change in the meaning of the utterance. Thus, mainly two different linguistic uses of pitch fluctuation are made: Firstly, to distinguish two or more words from one another and secondly, to distinguish one clause or sentence from another which may have similar composition otherwise.

Abercrombie (1967, 104) discussing the linguistic functions of speech melody says,

"The linguistic functions of speech melody are very varied, but of two fundamentally different kinds. In one case, the function of the speech melody patterns is to be part of the structure of sentences; in the other case, their function is to be part of the structure of words. In the former case, the patterns are called INTONATION, and in the latter case they are called TONE. In every language the function of speech melody is predominantly either of one kind or the other, so that the languages of the world can be divided into two classes, intonation languages and tone languages".

The present author, however, does not subscribe to the foregoing classification of Abercrombie's. There are languages in which the function of speech melody is of both

the kinds. They are "intonation languages" and also "tone languages" at the same time. Thus languages like Igbo, Yoruba, Lhasa-Tibetan, Burmese, Panjabi etc., do not easily find any place in the above classification. In fact, with a few notable exceptions like Vietnamese, most of the known "tone languages" have intonation as well.

The languages of the world can be divided into two classes, TONE LANGUAGES, which include pure tone languages like Vietnamese etc., partial tone languages like Norwegian, Swedish etc., apart from "tone-intonation" languages; and NON-TONE LANGUAGES which are entirely free from tone e.g. English, Hindi etc. The question of interrelationship of tone and intonation is one of those questions in linguistics that deserve much more attention than has been paid to them. A lot of work in this field is still to be done. Gleason (1961, 294-308) only initiated such work and drew the attention of scholars towards this question of such a vital importance when he remarked, "clearly one of the most crucial questions in the theory of intonation must be the relationships which exist with tone. We may take it as a working hypothesis that every language tonal or other, has some sort of intonation". According to him "tone-intonation languages" are of four types and Panjabi belongs to the third. "Here tone and intonation are cumulative" (p. 295). In Panjabi, thus, both the functions of speech melody are

exploited. The speech melody patterns are part of the structure of sentences and of the structure of words as well.

2.2 "A tone language may be defined as a language having lexically significant contrastive, but relative pitch on each syllable". (Pike: Tone Languages, 1948, p. 3) Pike clarifies this statement by adding that "Significant pitch distinguishes the meaning of utterances. When pitch is lexical, it distinguishes the meaning of words". He emphasises one point further, when he says that "each syllable of a tone language carries at least one significant pitch unit. Most frequently there is one-to-one correlation between the number of syllables and the number of tonemes in any specific utterance..... A disyllabic word has two syllables and at least two tonemes". (p. 4-5).

Pike (p. 5) allows that "there may exist languages which one desires to call tonal because, although they do not have contrastive pitch on each syllable, they do have lexically significant contrastive pitch spread over entire words or morphemes". But he is careful not to include such languages in the category of tone languages, he has just set up. So, he makes his position quite clear, "in this book, however, the syllable type of toneme must be present for a language to be labeled tonal".

K.C. Bahl (Tones in Punjabi, Indian Linguistics

Vol. 17, 1957, p. 146) clearly states that "the position of tone in Punjabi is significant in a word". Thus, probably, he does not agree with Pike, who would like to call a language, a tone language only when there is "one-to-one correlation between the syllables and tonemes in a specific utterance". But we can not understand Bahl's position when he refers to Pike for the definition of a tone language (p. 141, f.n. 10).

Each syllable in Panjabi does not carry "at least one significant pitch unit"; so if we apply Pike's definition we can not call Panjabi a tone language.

Gill and Gleason (1963, p. 48) clearly reject Pike's definition by not accepting significant pitch on each syllable as a criterion. They are of the view that, "There is one tone onset on every word..... the occurrence of a tone may be taken to mark a phonologic word, generally equivalent to a morphologic word". Thus, Gill and Gleason accept that Panjabi is a tone language in which lexically significant contrastive pitch is spread over the entire word and not over each syllable.

Every Panjabi word has one and only one tone. One can not agree with T. Grahame Bailey (1913) when he remarks that "syllables containing both tones are quite common, the low tone always coming first". The examples given by him are unacceptable and unpronounceable. It is

not in fact, physiologically possible to pronounce a word with these two (Low-rising and High-Falling) tones simultaneously on the same syllable or even in a word.

2.3 There are three distinctive tones in Panjabi. Different descriptive labels have been assigned to these tones by different linguists. According to Dr. T. Grahame Bailey (1913, p. XV) these may be termed "low rising (or low rising falling)", "high falling"; he has not given any label for the third tone which he merely describes as "the ordinary tone of speaking". Kali Charan Bahl (1957, p. 140) names the "Tones in Punjabi" as "Falling Tone", "Rising Tone", and "Even Tone" respectively. Gill and Gleason (1963, p. 44) call them "low tone", "high tone", and "mid tone". K.S. Sampat (1964, p. 108) describes these tones as "falling", "rising", and "level" respectively "on the basis of auditory perception".

The following chart will present a clearer picture:-

Linguist	A	B	C
BAHL K.C.	Falling Tone	Even Tone	Rising Tone
BAILEY T.G.	Low rising	Ordinary tone of speaking	High falling
GILL H.S. & GLEASON H.A. Jnr.	Low	Mid	High
SAMPAT K.S.	Falling	Level	Rising

In the present study no descriptive label has been given to the tones of Panjabi because, none of the labels mentioned above adequately describes the nature of the tone. All the three tones have different pitch-feature exponents in different contexts and are influenced by the environments in which they occur. If the 'descriptive label' does not in fact describe, there is no point in having it at all. The tones of Panjabi have therefore been called Tone-1, Tone-2, and Tone-3 in this thesis, each corresponding to the tone referred to in columns A, B, and C respectively. Numbers have been selected as being better than descriptive labels in that they are free from presuppositions.

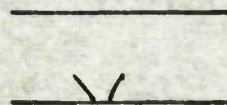
2.31 It is important to note that it is the word, as a unit, including both stressed and unstressed syllables that is taken to be affected by the pitch distinctions (and hence the tone). This means that equal treatment has been given to unstressed syllables preceding the stressed syllables in the word. Gill and Gleason (1963), on the other hand, have described such syllables as neutral, because "there is never any contrastive tonal phenomenon" and have in consequence given them little in the way of phonetic description in terms of pitch features ("the pitch of such syllables needs no attention here". p. 51).

2.32 On the basis of the following sets of sentences,

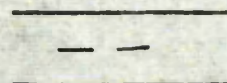
a three-term tone system for Panjabi can be set up: (See Appendix C Tgm 1 - Tgm 6: pp. 123-24)

I. One-word sentences:-

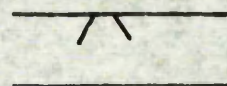
Tone-1 'koṛa.' Horse.



Tone-2 'koṛa.' Whip.

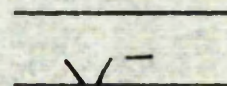


Tone-3 'koṛa.' Leper

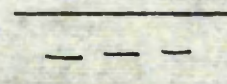


II. Two-word sentences:-

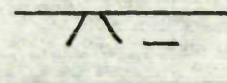
Tone-1 'koṛa e.' It is a horse.



Tone-2 'koṛa e.' It is a whip.



Tone-3 'koṛa e.' It is a leper.



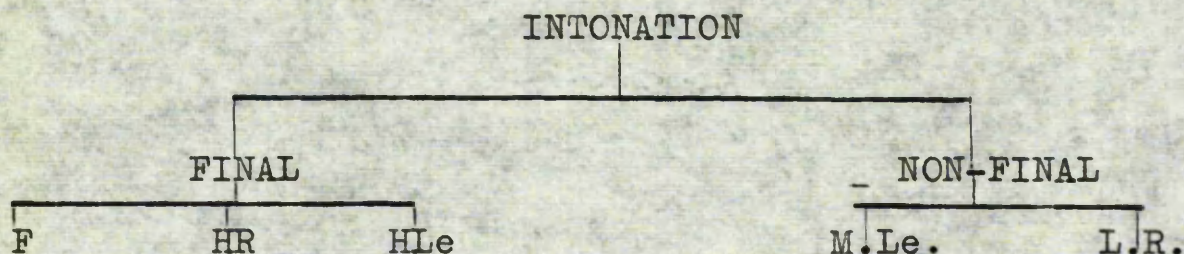
2.4 INTONATION:

Intonation is the pitch fluctuation pattern as applied to the unit larger than the word (clause or sentence), as a whole. Tones apply to individual words whereas intonation covers the whole clause as well as sentence (one-word sentence included). Unlike tones, a change of intonation does not affect the lexical value of the words. It only adds a shade of meaning to the clause or sentence spoken and brings out the attitude of the speaker.

In languages like English, French, Hindi etc. the differentiation in meaning due to speech melody patterns applies to the clause or sentence as a whole, the result being a difference in the shade of meaning and not lexical or dictionary meaning. These languages are called intonation languages and this particular function of speech melody is known as INTONATION. Panjabi too can be included in the category of languages to which languages like English etc. belong.

One might imagine the pitch of each word in a tonal language like Panjabi to be fixed beforehand, and therefore, it would be difficult for it to have any intonation; but the case is not so simple as this, because, pitch phenomena are found which can only be regarded as intonation. A given sentence may be spoken in more than one way to present and express different attitudes, each of the different terms of the tonal system accordingly having more than one pitch-exponent. In addition, the whole utterance gets a final or a non-final terminal contour.

2.41 In the present study of Panjabi, two main types of terminal contours have been used to delimit the intonational spans. These are utterance final and utterance non-final terminal contours; each having its own pitch exponents.

Figure 1

For the final clauses a three-term system can be stated as under:-

- 1) F symbolised by .
- 2) HR " "
- 3) HLe " !

For the non-final clauses a two term system may be stated as follows:-

- 1) M.Le symbolised by ,
- 2) L.R. " ;

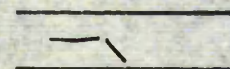
2.42 The following are examples of each type:

I) One word utterances:-

Utterance-final terminal contour

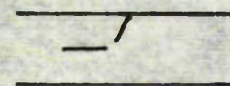
- (1) Tone-1 word with F-type intonation:

'kora.' (It is a) horse.



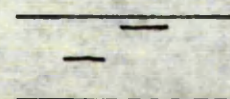
- (2) Tone-1 word with H.R.-type intonation:

'kora?' (Is it) a horse?



- (3) Tone-1 word with H.Le.-type intonation:

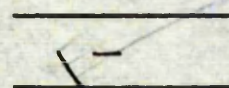
'kora!' (Is it really) a horse!



II) Utterance non-final terminal contour

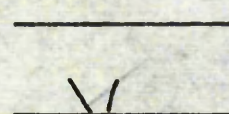
(1) Tone-1 word with M.Le.-type intonation:

'kora,' (It is) a horse,.....



(2) Tone-1 word with L.R.-type intonation:

'kora;' A horse, (a goat, a cow
are animals.)



The utterance non-final type shows continuation by the same speaker or at least his intention to continue. There is comparatively a greater amount of pause in the case of utterance final pitch terminal contour. The amount of pause realized in the former case, if any, is very small as compared with the latter. The tendency on the part of the speaker is to wait for or to allow the other speaker to start in the latter case, is worthy of note.

The basis for distinguishing the two main types for the present study has been taken to be the pitch behaviour of the pre-pausal word in the sentence. The focus of attention on these words does not mean that the pitch of the whole sentence is not important for consideration or that other words in the sentence have been ignored.

2.5 I Utterance Final

2.51 (1) F-type:-

The phonetic exponent of F is: a fall in the pitch
from mid to low.

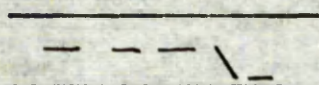
A fall in the pitch of the pre-pausal words in the Panjabi utterances marks the finality of the utterance, in addition to the fact, that it keeps this particular - F-type - of intonation, quite distinct from the rest.

As is clear from the examples (1) to (6) given below, the pre-pausal word in each case has a falling pitch. There is Tone-3 word 'rIa' in this position in examples (1) and (2). The pitch of this word in both the cases falls from mid to low. In examples (3) and (4), the Tone-2 word 'gIa', happens to be in the pre-pausal position. The pitch of the first syllable falls from mid to low and the last syllable is pronounced at a low-level pitch. The Tone-1 words 'pəjji' and 'pabia' mark the end of the utterances in examples (5) and (6) respectively. In these two cases, the pitch of the last syllable of the Tone-1 word falls from mid to low.

The utterances of this type include simple statements with or without any particular emphasis and also questions demanding answers other than a simple yes or no. It is important to note here, that these questions must have an "interrogative word". The presence of such a word in the

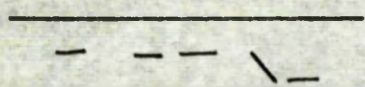
F-type clauses, helps to keep this type distinguished from other questions, which require yes or no as answer. In the following clause with words in the tone order 2-2-2 'kədō' is the "interrogative" word:-

'ram kədō gIa'. (When did Ram go?)



The pitch of the pre-pausal word 'gIa' is falling. The most likely answers to this particular type of question should make a mention of time, e.g., the Tone-3 word 'kəl' meaning yesterday, or a Tone-2 word 'hUṇe' meaning just now etc. and in no case a simple Yes or no. Similarly, the likely answer to the following question with words in the tone order 2-2-2 meaning where have you come from?,

'tū kitthō aIā'.



which includes the "interrogative word" 'kitthō' should be one specifying the place or the direction. The pitch of the ultimate word 'aIā' is falling from mid to low, which marks the finality of the utterance. The likely answers to this question too, can not simply be in terms of yes or no.

O'Connor and Arnold (1967) and A.E. Sharp (1958) have termed questions like the above in English, as "Special Questions" i.e., those which contain an interrogative word

such as What, How, Why etc. and which can not be answered by simply saying Yes or No.

Examples:- The following examples include non-emphatic clauses only. The number of the numerals immediately after the systematic transcription (see p. 12) shows the number of words in the clause and the order of the numerals shows the order of the tones. Approximate English rendering has been provided on the right hand side in brackets.

- (1) 'pa tərda rIa.' 1-2-3 (Brother kept swimming).

Tgm. 7 Mgm. 1

—
v — — ^ —

- (2) 'tar kUmda rIa.' 2-1-3 (Tar kept roaming about).

Tgm. 8 Mgm. 2

—
— \ — ^ —

- (3) 'pa šer gIa.' 1-3-2 (Brother went to the city).

Tgm. 9 Mgm. 3

—
v / \ —

- (4) 'O kər gIa.' 3-1-2 (He went home).

Tgm. 10 Mgm. 4

—
/ v \ —

- (5) 'taro šerō pəjji.' 2-3-1 (Taro fled from the city).

Tgm. 11 Mgm. 5

—
— / \ v \

- (6) 'O teri pabia' 3-2-1 (She is your sister-in-law).

Tgm. 12 Mgm. 6

/ - - \ / \

2.52 (2) H.R. Type:-

Phonetic Exponent: a high rise in the pitch.

When a given clause is spoken with this type of intonation, the pitch of the pre-pausal word rises from mid to high. This marks the finality of the Panjabi utterances. This feature is very important since it keeps this particular type distinguished from the rest. It has been noted that the sharp rise in the pitch of the ultimate word in the clause in this case is not kept at the high level for a considerable amount of time to be perceived as such. So the hearer perceives the rise and not the high level of the pitch. This feature, being the only one to distinguish the H.R. term of the system from the H.Le term, where this high level of the pitch is maintained for a comparatively longer period so as to be perceived, is the most important one to be mentioned here.

The Tone-3 word 'rIa' is the pre-pausal word in examples (7) and (8). The pitch of this word rises considerably high, to its maximum in these two cases. The Tone-2 word 'gIa' in examples (9) and (10) also shows a similar pitch-behaviour. The Tone-1 words 'pajji' and 'pabia' respectively in examples (11) and (12) have somewhat

similar pitch-features, the pitch of the last syllable in each case rising from mid to high.

The actual duration (see Appendix A p. 110) of the pre-pausal words in the examples (7) to (12) given below, is shorter as compared with examples (1) to (6) i.e., the F-term of the system. In example (1) the Tone-3 word 'rIa' approximately measures 30 c.s. whereas its duration in example (7) is approximately 22 c.s. only. The Tone-2 word 'gIa' in examples (3) and (9) respectively measures approximately 30 c.s. and 24 c.s. Tone-1 word, 'pəjji' in examples (5) and (11) approximately measures 44 c.s. and 40 c.s. respectively. The whole clause not the pre-pausal word alone is spoken rather quickly with this type of intonation. On comparison it is found that whereas the duration of the clauses in examples (1) to (6) respectively is approximately 100 c.s., 112 c.s., 110 c.s., 76 c.s., 124 c.s., and 106 c.s.; those of examples (7) to (12) respectively is approximately 88 c.s., 90 c.s., 84 c.s., 88 c.s., 102 c.s. and 96 c.s. Thus almost all the examples show that the same clause when spoken with H.R. type, as compared with F-type takes approximately from 10 c.s. to 22 c.s. less.

Utterances of this type include questions the most likely answers for which are simple yes or no. O'Connor and Arnold (1967) call questions of this type "General

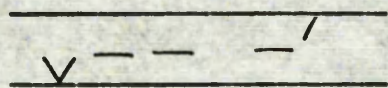
Questions". Such questions do not have an interrogative word, unless these are echo questions. The absence of interrogative word, helps to keep these distinct from the questions with the F-type intonation. These questions may be asked without any particular emphasis but these can only be answered by saying simple yes or no. It appears that the speaker is seeking some sort of confirmation or denial.

Examples:-

The number and order of the numerals shows the number and the order of words with tones shown by numerals in the clause in each case:-

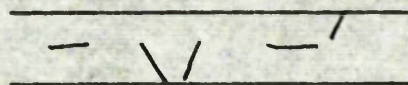
- (7) 'pa tərda rIa?' 1-2-3? (Did brother keep swimming?).

Tgm. 13



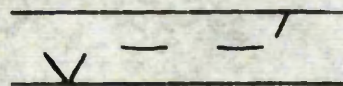
- (8) 'tar kUmda rIa?' 2-1-3? (Did Tar keep roaming about?).

Tgm. 14



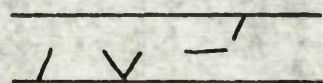
- (9) 'pa šer gIa?' 1-3-2? (Did brother go to the city?).

Tgm. 15

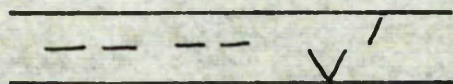


- (10) 'O kar gIa?' 3-1-2? (Did he go home?).

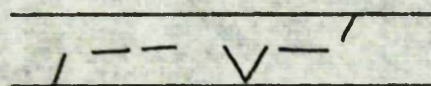
Tgm. 16



- (11) 'taro šerō pəjji?' 2-3-1? (Did Taro flee from the city?). Tgm. 17



- (12) 'O teri pabia ?' 3-2-1? (Is she your sister-in-law?). Tgm. 18



2.53 (3) H.Le-type

The phonetic exponent of H.Le. is: High level pitch

The pitch of the pre-pausal words in the clauses spoken with H.Le-type of intonation is high level. The rise in the pitch starts from the very beginning of the clause. The high level of the pitch of these words is kept for a considerable amount of time so as to be perceived by the hearer. As has already been pointed out, (see p. 30) this feature is peculiar only to this type of intonation. It was noted before (p. 30) that the pitch of these words with H.R.-type also shows a sharp rise, but in that case the rise in the pitch is not maintained at a high level to be perceived as such. However, in the H.Le-type the pitch does remain high level.

The Tone-3 word 'rIa' is in the pre-pausal position in examples (13) and (14). The pitch of this word is almost high level. The pitch measurements taken from the tonograms of these examples show that the variation in the pitch, if at all there, is only from 0 Hz to 20 Hz approximately,

which I believe not to be perceived by the human ear. In examples (15) and (16) the Tone-2 word 'gIa' is in this position. The pitch of this word too, is high level and the amount of variation in the pitch is almost the same which is negligible. The clauses in examples (17) and (18) have Tone-1 words 'pajji' and 'pabia' respectively in the pre-pausal position. These words seem to behave a little bit differently here in this position, from the words of the other two tones discussed before. The variation in the pitch of these polysyllabic words is no doubt greater as compared with the previous examples (13) to (16) and perceptible too; but the fact remains that the pitch of the last syllable in these words is kept at a high level for a sufficient amount of time to be perceived. As the rise starts from the very beginning of the clause, it was found difficult to represent the pitch of the individual words in examples (17) and (18) within the two lines. So the pitch marks represent relative pitch levels. The rise in the pitch and also its level is, however, certainly distinct from the rise noticed under the H.R. term of the system.

The pre-pausal words under this term of the system are shorter in duration than the H.R. term, which in turn are shorter than the words under F-term of the system. The Tone-3 word 'rIa' in examples (7) and (13) respectively

measures approximately 24 c.s. and 18 c.s. In examples (10) and (16) the Tone-2 word 'gIa' approximately measures 32 c.s. and 18 c.s. respectively. The Tone-1 word 'pabia' in examples (12) and (18) respectively measures approximately 58 c.s. and 44 c.s. Thus the pre-pausal words with H.Le type of intonation are spoken more quickly (i.e. with a fast tempo) than the same words spoken with the H.R. type. The duration of the whole sentences in examples (13) to (18) as measured from the tonograms of these, shows a difference of approximately 14 c.s. to 32 c.s. less than the same sentences spoken with F-type. (See Appendix p.125-28.)

This type of Panjabi intonation is used by the native speaker when he is under the influence of some emotion like sudden shock, wonder, surprise etc. A given clause is spoken very quickly, as mentioned above, with this type as compared with the F-type. The whole clause is spoken at a fairly high tempo. The rise in the pitch which starts from the beginning of the utterance reaches a high level towards the end.

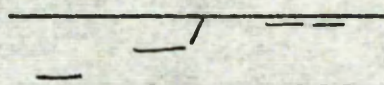
It seems that the speaker finds it difficult to believe in what has been said or has happened before. The fact, that there is the potentiality of a greater pause proves that the speaker, though a little bit agitated, is eager to get information for the confirmation or otherwise of his belief or expectation, and is ready to stop so that

the other speaker may begin.

Examples:- The number and the order of the numerals shows the number and order respectively of the words with the tones represented by the numerals 1, 2, and 3.

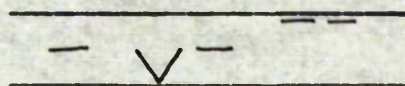
- (13) 'pa tārda rIa!' 1-2-3! (Brother kept swimming!).

Tgm. 19



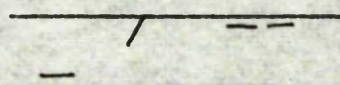
- (14) 'tar kUmdā rIa!' 2-1-3! (Tar kept roaming about!).

Tgm. 20



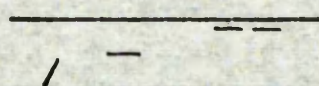
- (15) 'pa šer gIa!' 1-3-2! (Brother went to the city!).

Tgm. 21



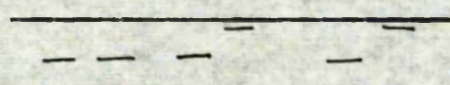
- (16) 'O kar gIa!' 3-1-2! (He went home!).

Tgm. 22



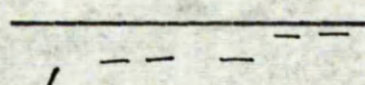
- (17) 'taro šerō pəjji!' 2-3-1! (Taro fled from the city!).

Tgm. 23



- (18) 'O teri pabia!' 3-2-1! (She is your sister-in-law!).

Tgm. 24



2.6 II Non Final

2.61 (1) M.Le. type:-

Phonetic exponent: mid level of the pitch.

The last syllable of the pre-pausal word of the clause spoken with this type of intonation has a mid level pitch. This level pitch is clearly distinct by its lower pitch level, from the high level pitch that was noticed in connection with the H.Le. term of the system for the final clauses. In fact, the mid level of the pitch of the pre-pausal word is the only feature to keep this type distinct from the rest. In addition, it marks the non-finality of the Panjabi utterances.

An attempt has been made in examples (19) to (25) to present a fair sample representative of this type of the Panjabi intonation. The focus of attention, once again, is the pitch-behaviour of the pre-pausal words in each case. In examples (19) to (21) the Tone-2 word occupies this position. The pitch of the word 'gIa' in examples (19) and (20) and also that of the word 'si' in example (21) remains at the mid level. The Tone-3 words 'kIa' and 'leba' respectively are in this position in examples (22) and (23). The pitch features illustrated below, show that these words too, end on a mid level of pitch. In example (24) and (25) the Tone-1 words 'tote' and 'tare' also show a similar pitch behaviour.

The point worth mentioning here is that almost all the examples quoted below are those of the clauses that form a part of some larger sentence. The native speakers use this type of intonation when they would like to continue with what they were saying before but with a certain amount of hesitation. It may be that it is because of this hesitation that the pitch of the pre-pausal words remains at a non-high level. The nearest renderings of the examples, in English, enclosed in brackets, are there to make the context more clear. It seems that the speaker is making a statement or a comment but with some reservations. The speaker does not intend to stop or wait for the other speaker(s) to start but to continue after a very small pause. Examples:- All the clauses can be followed by 'per' meaning but, and another clause. The number and the order of the words with different tones is shown by the numerals used immediately after the systemic transcription.

- (19) 'O kər gIa', pər 3-1-2, He ⁶⁹went home, (but did not tell anybody.)

/ v - -

- (20) 'kə kə pəs ho gIa', 2-2-2-2, My son has passed, (but I am not pleased.)

- - - - -

- (21) 'pola kəl aJa si',.... 1-3-2-2, Bhola came yesterday.
(but did not stay.)

 \ / - - -

 \ /

- (22) 'mɛ̃ onŪ kɪa',.... 2-3-3, I told him, (but he
did not listen to
me.)

 - - / / -

 / -

- (23) 'onŪ pɛsa tā ləba',.... 3-2-2-3, He did find the
money, (but he did
not change.)

 / - - - - / -

 / -

- (24) 'tobi ne kəpɾe t̃a tote',...1-2-2-2-1, The wāhserman
washed the clothes,
(but forgot to dry
them.)

 \ - - - - - V -

 \ - - - - - V -

- (25) 'mā ne cəl t̃are',.... 2-2-2-1, Mother cooked rice,
(but did not add
salt.)

 - - - V -

 - - - V -

2.62 (2) L.R. Type:-

The Phonetic exponent of L.R. is: Rise in the pitch
from low to mid.

The tendency towards rise in the pitch of the pre-pausal words is the distinctive feature of this type. The rise in this case is from low to mid. The starting point of the rise is an important feature to be noted. There is no difficulty when there is a Tone-1 word in the pre-pausal position. But dissyllabic Tone-2, and Tone-3 words in a list do not seem to fit into the pattern. It has been

noticed that the pitch of the second syllable in a dissyllabic Tone-2 word rises slightly higher than the first one. The second syllable of the dissyllabic Tone-3 word, however, shows a fall in the pitch, but the fall is not from mid to low but only from high to mid. So, even the fall that is noticed here is not the same as was mentioned in connection with the F-term of the system for the final clauses. (see p. 27).

The L.R. type of Panjabi intonation is represented by examples (26) to (32)a given below. The pitch features of all the words individually need attention in examples (26) and (27). In example (26) all the words are Tone-2 monosyllabic words and the pitch in each case rises from low to mid. In example (27) the three dissyllabic words belong to Tone-1, Tone-2, and Tone-3 respectively. The pitch of the second syllable in each case is important here. The pitch of the '-ra' syllable in the Tone-1 word 'koṛa' (horse) rises from low to mid. It rises very slightly from mid level in the case of Tone-2 word 'koṛa' meaning whip. The second syllable in the Tone-3 word 'koṛa' (leper) shows a slight fall in the pitch. In example (28) the pre-pausal word is the Tone-2 word 'nṣ'. The pitch of this monosyllabic word rises from low to mid. The focus of attention in examples (29), (30), (32), and (32)a is the first word in the sentence, which incidentally, occupies the post-pausal and also the

pre-pausal position in each case. In examples (29) and (30) it is a Tone-2 word. The pitch of the second syllable of 'kaka' in (29) rises from low to mid. Monosyllabic word 'mā' in example (30) also shows a rise in the pitch from low to mid. In example (32) the pitch of the second syllable of the Tone-1 word 'poli' rises from low to mid, but its end point is slightly higher than the starting point of the first syllable. The pitch of Tone-3 in a monosyllabic word 'son' as in example (32a) shows a rise from low to mid. In example (31) the Tone-2 word 'ji' has a pitch higher than the pitch of the last syllable of 'nəməste'.

The L.R. Type of intonation is used for a number of purposes. The native Panjabi speaker employs, this term of the system for the non-final clauses, for counting, listing, enumerating, and also for calling somebody who is not very far away. Examples (29) to (32a) represent the use made of this term for the purpose of addressing someone. Example (31) is an example of the "silence breaker" used by the Hindu speakers generally. The Sikh speakers, however, mainly use another form, i.e. Tone-3 word 'sasrikal' for the same purpose. Examples (32) and (32a) show that this type is used for orders and requests also.

Examples:-

- (26) Words in a list in the tone order 2; 2; 2; 2;:-

'che; sætt; æt̥t̥h; n̥ʒ;' (six; seven; eight; nine;)

/ / / /

- (27) Words of the different tones in a list, order being Tone-1, Tone-2, and Tone-3 respectively:-

'koṛa; koṛa; koṛa;' (A horse; a whip; a leper)

\ / — — / —

- (28) A clause like the following with general emphasis with the words in the tone order 2-2-2-2;:-

'che te t̥l̥n n̥ʒ;' (Six and three (make) nine.)

— — — /

- (29) The first word in the following sentence with words in the tone order 2; 2-2.-:-

'kaka; kaḍō aIā' (Son, when did you come?)
(vocative)

— / — — \ —

- (30) The first word in the following sentence composed of the words in the tone order 2; 2-2-2.-:-

'mā; m̥ hUṇe aIā' (Mother, I have come just now)
(vocative)

/ — — — \ —

- (31) The following "silence breaker" usually used by the Hindus. Words are in the tone order 2-2;:-

'nəməste ji;' (Greetings sir!)

 - - - /

- (32) A request or order like the following, with the words in tone order 1; 2-2.:-

'poli; roṭi lIa'. (Bholi, bring (some) food.)

 \ / - - \ _

- (32a) 'son; əmb lIa'. (Sohn, bring mangoes.)

 / - \ _

CHAPTER III

EMPHASIS

3.0 Emphasis:-

By **emphasis**, I mean, the particular prominence that is given to one or more words in a given sentence to focus attention on their special importance. Perceptually prominence is the perceived "loudness" of a syllable relative to its environment. The acoustic correlates of prominence are duration, fundamental frequency and sound pressure level.

3.1 Emphatic Sentences:-

Sentences in which one or more words are given prominence to bring out their relative importance, have been termed emphatic for the purpose of this study. In Doabi speech, as in some other languages also, these sentences normally function grammatically as declaratives and special questions. The speaker gives emphasis to some specific point which he wishes the hearer(s) to focus attention on. The concern of the speaker seems to be to bring this point into contrast with the other points; some of which may not be present in the given sentence, or simply to intensify its significance. In examples (33) to (50) to follow, there is one word in each sentence which is spoken with a comparatively greater amount of breath force. I have termed

such a word "emphatic".

It is important to note here that emphasis does not change the lexical value of the individual words in a sentence. The difference in the total meaning of the sentence is because of different pitches, reaching higher levels in some cases and lower levels in others. In a given sentence like,

'pa tar~~da~~ rIa' 1-2-3

meaning, brother kept swimming, all the three words in turn can be made emphatic keeping the same terminal contour.

An attempt has been made to study the effect of emphasis on the sentence containing words of different tones, in different positions. Polysyllabic words as well as monosyllabic have been included in the study.

The intonation for the examples (33) to (50) quoted under sections (A), (B) and (C) below is the F term of the system set up for the final clauses in Panjabi speech. The phonetic exponent of the F-term being a fall in the pitch of the sentence-final-word from mid to low. For the sake of comparison repeated references have been made to examples (1) to (6) of non-emphatic sentences given under the F term of the system on pages 29-30 in Chapter II.

3.2 Duration:-

It has been found on examination that in Panjabi speech, words when emphatic are comparatively longer in

duration than when non-emphatic in the identical position in a sentence. The difference in the duration of the emphatic words is almost always felt by the hearer(s) although it may not be very considerable in some cases. For the hearer(s) there is never a difficulty in perceiving the difference.

The following comparative tables show the difference in the duration of words when emphatic from when non-emphatic. The measurements expressed in centi¹seconds are based on the oscillograms of the pitch curves obtained from the pitchmeter. (See Appendix C pp.125-26 and 131-36)

3.21 In table 3.I the words under study are in the sentence initial position in each of the examples included in the last column and referred to by the number in each case.

TABLE 3.I:- SENTENCE INITIAL POSITION

S.No.	Word and Tone	Non-emphatic	Emphatic	Difference		Examples	
				+	-	Non.	Emph.
(i)	'pa'	1	24	34	+ 10	(1)	(33)
(ii)	'pa'	1	34	30	- 4	(3)	(34)
(iii)	'tar'	2	32	32	+ 0	(2)	(35)
(iv)	'taro'	2	40	46	+ 6	(5)	(36)
(v)	'o'	3	20	26	+ 6	(4)	(37)
(vi)	'o'	3	16	25	+ 9	(6)	(38)

On the basis of the results of above comparison it can be said that the native feeling and perception that in the sentence initial position in a sentence the emphatic word is longer in duration than the non-emphatic word in the same position, is largely supported. In (ii) where a monosyllabic Tone-1 word 'pa' is the focus of attention, the duration of the emphatic word, contrary to perception is less by about 4 c.s. in actual duration as measured from the pitch curve tracing. This may be a single case only. (cf. tables 3.II, 3-III). Again, in (iii) no difference in the duration of monosyllabic Tone-2 word 'tar' in the two forms is found. Both the emphatic as well as the non-emphatic words are equal in duration. In all the other cases there is definitely an increase in the duration when the words are emphasized.

3.22 The words being studied in Table 3.II below as to their comparative duration are in the Penultimate position in a three-word-sentence in each of the examples. For the emphatic words in this position see examples (39) to (44) in section (B) below and for the non-emphatic words the examples are (1) to (6).

TABLE 3.II:- Duration of words in centi seconds in the
PENULTIMATE POSITION

S.No.	Word and Tone	Non- emphatic	Emphatic	Difference		Examples	
				+	-	Non.	Emph.
(i)	'kar' 1	33	65	+ 32		(4)	(39)
(ii)	'kUmda' 1	54	64	+ 10		(2)	(40)
(iii)	'tarda' 2	50	55	+ 5		(1)	(41)
(iv)	'teri' 2	30	40	+ 10		(6)	(42)
(v)	'šer' 3	44	46	+ 2		(3)	(43)
(vi)	'šerō' 3	42	46	+ 4		(5)	(44)

It is possible to generalize on the basis of the above, that in a three-word sentence the penultimate word when emphasized is longer in duration as compared with the non-emphasized word in the same position which is quite true in perception terms also.

The difference in the duration of the Tone-3 emphatic word is comparatively small. One important point to be noticed in the tonogram of example (39). (See Appendix C Tgm. 31) is the closure period for the stop consonant 'k' in Tone-1 monosyllabic emphatic word 'kar'. It is almost about two thirds of the total duration of the word. Out of approximately 65 c.s. taken to pronounce the whole word with

emphasis, about 38 c.s. are taken by the closure phase alone, which is slightly more than the duration of the non-emphatic word. In (v) the difference in duration of the monosyllabic Tone-3 emphatic word is very slight.

3.23 All the words that are the focus of attention in table 3.III below are in the sentence final position in each of the sentences in which they occur. The sentence final word is emphatic in each case in the examples given below under section (C). The approximate measurement of duration is in terms of centi seconds and is based on the tonograms of the examples under discussion.

TABLE 3.III?- Words in the SENTENCE FINAL POSITION

S.No.	Word and Tone	Non-emphatic	Emphatic	Difference		Examples	
				+	-	Non.	Emph.
(i)	'pəjji'1	40	52	+ 12		(5)	(45)
(ii)	'pabia'1	60	72	+ 12		(6)	(46)
(iii)	'gIa' 2	22	30	+ 8		(4)	(47)
(iv)	'gIa' 2	30	34	+ 4		(3)	(48)
(v)	'rIa' 3	22	34	+ 12		(1)	(49)
(vi)	'rIa' 3	22	36	+ 14		(2)	(50)

As is clear from the above chart the emphatic

word in the sentence final position in Panjabi speech is longer in duration than the non-emphatic word in the same position. The difference in the case of Tone-2 words is comparatively small.

3.3. RELATIVE LOUDNESS:-

A study of the relative loudness shows that in Panjabi speech the emphatic words are comparatively louder than the non-emphatic words in identical positions in a sentence. This loudness which is very easily perceived by the hearer(s) acts as one of the important cues that help in the recognition of emphatic word(s). The hearer's attention is drawn to the specific point the speaker wishes to be noted as outstanding in the utterance, by this feature.

3.31 In the table 3.IV below, the words under comparative study as to their relative loudness expressed in decibels, are all in the sentence initial position. The measurements are based on the intensity curve traces obtained from the intensity meter.¹ Measurements from these have also been used in the tables 3.V and 3.VI to follow. Examples (33) to (39), (40) to (44), and (45) to (50) are respectively discussed in tables 3.IV, 3.V and 3.VI.

1. See Appendix C pp. 137-46.

TABLE 3.IV. Words in the SENTENCE INITIAL POSITION

S.No.	Word and Tone	Non-emphatic 1st syll 2nd syll	Emphatic 1st syll 2nd syll	Difference + 1st syll 2nd syll	Examples non. emph
(i)	'pa' 1	42	46	+ 4	(1) (33)
(ii)	'pa' 1	43	47.5	+ 4.5	(3) (34)
(iii)	'tar' 2	46	48	+ 2	(2) (35)
(iv)	'taro' 2	41	40	+ 2	(5) (36)
(v)	'o' 3	45	49	+ 4	(4) (37)
(vi)	'o' 3	45	49	+ 4	(6) (38)

That the emphatic words in the sentence initial position are comparatively louder than the non-emphatic words in the same position in normal Panjabi speech becomes quite clear by looking at the result of the above chart. In all the examples discussed, it is found that the emphatic words are louder by 2 to 4.5 decibels approximately in case of monosyllabic words. In case of disyllabic words too, as in (iv) above in table 3.IV, the first syllable is louder by about 2 decibels and the second by about one decibel less than this when compared with the non-emphatic word. The Tone-2 words are slightly less loud than the Tone-1 and Tone-3 words when emphatic. The results are quite in keeping with the perception.

3.32 The emphatic words in the penultimate position also, in Panjabi sentences, are louder than the non-emphatic words in the identical position. As to their relative loudness, the emphatic words in the sentences cited under section (B) have been compared with the non-emphatic words in penultimate position in examples (1) to (6) in table 3.V below. The result supports the perceptual feeling of the native speakers.

In the case of disyllabic emphatic words of Tone-2, the second syllable is not less louder than the first. Whereas in the non-emphatic words the second syllable is definitely less in loudness. The second syllable in Tone-3

TABLE 3.V. Words in the PENULTIMATE position in a three word sentence:-

S.No.	Word and Tone	Non-emphatic 1st syll 2nd syll	Emphatic 1st syll 2nd syll	Difference+ 1st syll 2nd syll	Examples non. emph
(i)	'kər' 1	43	47	+ 4	(4) (39)
(ii)	'kUmda' 1	40	42	+ 4	(2) (40)
(iii)	'tərda' 2	44	41	+ 3	(1) (41)
(iv)	'teri' 2	46	40	+ 0	(6) (42)
(v)	'Šer' 3	42.5	46	+ 4.5	(3) (43)
(vi)	'Šerō' 3	40	30	+ 6	(5) (44)

emphatic disyllabic words becomes much more loud than the second syllable of the non-emphatic word. The first syllable of Tone-2 disyllabic emphatic words may not be louder than the first syllable of the non-emphatic words as is clear from (iv) in table 3.V above.

3.33 That in the sentence final position too, the emphatic words in Panjabi sentences with falling pitch terminal contour, are comparatively louder than the non-emphatic ones is supported by the analysis of data in table 3.VI below. Emphatic Tone-3 words in the sentence final position are more loud than the similar Tone-2 words. The second syllable of disyllabic Tone-1 emphatic words is comparatively louder than the first syllable which is, of course, louder than the non-emphatic first syllable.

3.34 CONCLUSIONS:-

1. Emphatic words in normal Panjabi speech are louder than the non-emphatic words in the same position in a sentence.

2. This "loudness" is one of important cues for the perception of emphasis on a specific point in an utterance.

3. The loudness is only relative and not absolute.

3.4 PITCH

In Panjabi speech the beginning of an emphatic word has a higher pitch as compared with the pitch of the

TABLE 3.VI. Words in the SENTENCE FINAL POSITION:-

S.No.	Word and Tone	Non-emphatic 1st syll 2nd syll	Emphatic 1st syll 2nd syll	Difference + 1st syll 2nd syll	Examples non. emph.
(i)	'pəjji'l	41	34	+ 4	+ 6 (5) (45) (45)
(ii)	'pabia'l	43	41	+ 2	+ 6 (6) (46) (46)
(iii)	'gIa' 2	41.5	48	+ 6.5	(4) (47) (47)
(iv)	'gIa' 2	45	47	+ 2	(3) (48) (48)
(v)	'rIa' 3	39	46	+ 7	(1) (49) (49)
(vi)	'rIa' 3	41	47	+ 6	(2) (50) (50)

non-emphatic word in the same position in a given sentence.

The end point of an emphatic word has:

(a) a pitch rising higher where the non-emphatic word ends on a rising pitch,

(b) a rise in pitch where the non-emphatic word has a level pitch, and

(c) a pitch falling lower where the non-emphatic word ends on a falling pitch.

Approximate pitch measurements in Hz were taken from the pitch tracing obtained from the pitchmeter¹. The examples (33) to (38) in section (A) below have their sentence initial word emphasized. In examples (39) to (44) under section (B) the penultimate word is emphatic in each case. The sentence final word in each of the examples (45) to (50) under section (C) below is emphatic. For comparison examples (1) to (6) with the same, i.e., falling-pitch terminal contour, have been selected; these examples are of sentences which do not include any word which can be termed "emphatic". (see p. 44).

3.41 As is quite clear from the table 3.VII below Tone-1 and Tone-3 words when emphatic begin with a pitch which is higher than the beginning pitch of these words when non-emphatic but in the same position in a sentence. Tone-2 emphatic words, on the other hand, have almost the

1. See Appendix C pp. 120-36.

TABLE 3.VII. Words in SENTENCE INITIAL POSITION

S.No.	Word and Tone	Non-emphatic			Emphatic			Difference \pm			Examples	
		B	C	E	B	C	E	B	C	E	non	emph
(i)	'pa' 1	115	85	110	120	85	110	+ 5	+0	+ 0	(1)	(33)
(ii)	'pa' 1	110	90	110	120	85	125	+10	-5	+15	(3)	(34)
(iii)	'tar' 2	110		120	110		130	+10		+10	(2)	(35)
(iv)	'taro' 2	100		120	100		130	+ 0		+10	(5)	(36)
(v)	'o' 3	120		160	130		220	+10		+60	(4)	(37)
(vi)	'o' 3	105		160	135		225	+30		+65	(6)	(38)

Ø In table 3.VII and also in the following discussion, B, C, and E respectively stand for the beginning point, the change point, and the end point of a tone).

same pitch in the beginning as that of the non-emphatic words. The end point in each of the cases finishes at a higher pitch as compared with the pitch of the end point in the case of these words being without emphasis. The change point in Tone-1 emphatic words may have a lower pitch than the pitch of the change point in non-emphatic words. The emphatic Tone-1 words may not end abruptly on a rising pitch and the rise in pitch may be kept level in certain cases. Emphatic Tone-3 words end on a very high pitch as compared with the end points of the other two tones.

3.42 That the end point of the tone of emphatic Panjabi words in the penultimate position has a comparatively higher pitch, becomes clear from the contents of table 3.VIII. The beginning point of the emphatic words may be higher in pitch.

Tone-1 emphatic words end on a higher pitch as compared with the pitch in the end of non-emphatic Tone-1 words in the penultimate position in a sentence. The rise from the change point to the end point in emphatic words is approximately from 30 Hz to 35 Hz whereas this is only about 10 Hz when the words are not emphatic. Fall in pitch from the change point to the end point in case of disyllabic Tone-3 emphatic word 'šerō' is slightly more than the fall in case of non-emphatic word. It is because of emphasis probably, that the pitch rises higher and then

TABLE 3.VIII. PITCH

Words in the Penultimate position:-

S.No.	Word and Tone	Non-emphatic			Emphatic			Difference +			Examples
		B	C	E	B	C	E	B	C	E	
(i)	'kər' 1	105	90	100	120	90	120	+15	+	0	(4) (39)
(ii)	'kUmda' 1	120	80	90	120	85	120	+	0	+	(2) (40)
(iii)	'tərda' 2	190		190	100		120	+10			(1) (41)
(iv)	'teri' 2	110		140	110		160	+	0		(6) (42)
(v)	'ŋər' 3	110		120	120		170	+10			(3) (43)
(vi)	'ŋərō' 3	110	125	110	110	150	130	+	0	+25	(5) (44)

TABLE 3.IX. PITCH

Words in the SENTENCE FINAL position:-

S.No.	Word and Tone	Non-emphatic			Emphatic			Difference +			Examples	
		B	CC	E	B	CC	E	B	C	E		non emph
(i)	'pəjji'l	140		80	170	90	70	+30		-10	(5)	(45)
(ii)	'pabia'l	120		80	130	80	80	+10		+ 0	(6)	(46)
(iii)	'gIa' 2	90		80	160	100	70	+70		-10	(4)	(47)
(iv)	'gIa' 2	110		80	110		80	+ 0		+ 0	(3)	(48)
(v)	'rIa' 3	85	100	75	90	125	70	+ 5	+25	- 5	(1)	(49)
(vi)	'rIa' 3	100	100	80	160	160	70	+60	+60	-10	(2)	(50)

falls in such words, non-emphatic words having almost level pitch end on a rising pitch when emphasized.

3.43 With the F term of the intonation system set up for the final clauses in Panjabi it was stated that the pitch of the sentence final words falls. In the case of emphasis too this factor is present. As is clear from p.60 the above chart/, the end point in all these cases is at a lower pitch as compared with the pitch of the beginning points and also that of the end point of the non-emphatic words.

In case of Tone-1 emphatic words the pitch falls, rises and falls finally to low level. In these examples there is only a fall in the pitch of the Tone-2 emphatic words. Tone-3 words when emphatic show a rise and then a fall in the pitch when in the sentence final position.

3.5 Emphatic Sentences

3.51 Section (A)

(33) 'pa tərda rIa.' 1-2-3. Brother kept swimming.

Tgm. 25 Mgm. 7

v — — ^ _

(34) 'pa šər gIa.' 1-3-2. Brother went to the city.

Tgm. 26 Mgm. 8

v — \ _

(35) 'tar kUmda rIa.' 2-1-3. Tar kept roaming about.

Tgm. 27 Mgm. 9

— \ _ ^ _

- (36) 'taro šerō pəjji.' 2-3-1. Taro fled from the city.
Tgm. 28 Mgm. 10

— — / \ V \

- (37) 'o kər gIa.' 3-1-2. He went home.
Tgm. 29 Mgm. 11

— V \ —

- (38) 'o teri pabia.' 3-2-1. She is your sister-in-law.
Tgm. 30 Mgm. 12

— — — V \

3.52 Section (B)

- (39) 'o kər gIa.' 3-1-2. He went home.
Tgm. 31 Mgm. 13

— V \ —

- (40) 'tar kUmda rIa.' 2-1-3 Tar kept roaming about.
Tgm. 32 Mgm. 14

— V — ^ —

- (41) 'pa tərda rIa.' 1-2-3. Brother kept swimming.
Tgm. 33 Mgm. 15

V — — ^ —

- (42) 'o teri pabia.' 3-2-1. She is your sister-in-law.
Tgm. 34 Mgm. 16

/ — / \ \

- (43) 'pa šer gIa.' 1-3-2. Brother went to the city.
Tgm. 35 Mgm. 17

V / \ —

- (44) 'taro šerō pəjji.' 2-3-1. Taro fled from the city.

Tgm. 36 Mgm. 18

— — / \ V \

3.53 Section (C)

- (45) 'taro šerō pəjji.' 2-3-1. Taro fled from the city.

Tgm. 37 Mgm. 19

— — / \ V \

- (46) 'o teri pabia.' 3-2-1. She is your sister-in-law.

Tgm. 38 Mgm. 20

/ — — V — \

- (47) 'o kər gIa.' 3-1-2. He went home.

Tgm. 39 Mgm. 21

— V \ —

- (48) 'pa šer gIa.' 1-3-2. Brother went to the city.

Tgm. 40 Mgm. 22

V ^ \ —

- (49) 'pa tərda rIa.' 1-2-3. Brother kept swimming.

Tgm. 41 Mgm. 23

V — — ^ —

- (50) 'tar kUmda rIa.' 2-1-3. Tar kept roaming about.

Tgm. 42 Mgm. 24

— V \ ^ —

CHAPTER IV

PITCH-FEATURES

4.0 A discussion of the various pitch-feature-exponents of each of the terms of the tonal system, set up in this thesis for Panjabi words, will be found in this chapter. Although I have tried to follow A.E. Sharp¹ (1954) in the present treatment, I have not attempted anything as ambitious as his. As the scope of this thesis is different from that of his article, so I have had to be satisfied with the present treatment. A noticeable difference, however, will be found in the concept of 'piece' employed here from that of Sharp.

Tone in Panjabi is a word prosody. It is not the property of certain syllables only, but applies to the whole word as a unit. Thus the tonal contour is spread over the entire word. Pitch-features being one of the most important phonetic exponents that help to keep the different terms of the system distinct from one another. They are discussed here in this Chapter. There are some other exponents too that are associated with the pitch-feature exponency.

1. A.E. SHARP, "A Tonal analysis of the disyllabic noun in the Machame dialect of Chaga", BSOAS XVI, 1 (1954), pp. 157-69.

Discussion of such exponents will follow in the next Chapters. Attention here is being focussed on the pitch-feature exponents only.

A three-term tone system has been set up for the present study of Panjabi speech. Each of the terms has a number of pitch-feature exponents. Certain variations in the pitch levels that have been noted may be because of environment (examples 1,2,9,11,13), emphasis (examples 38, 43, 46), voice-register or of a combination of two or more of these.

If the words under study are put in equivalent conditions, a three-way contrast is commonly present (cf. p. 68). Provided the intonation of a given clause is not changed and the words in turn are fitted in the same place in the frame, the contrast is, in general, clearly maintained. This is true of one-word as well as of two-word sentences (Chapter II p. 23), although most of the examples discussed here are those of larger sentences.

The three terms of the system are:-

- (a) Tone-1
- (b) Tone-2
- (c) Tone-3


4.1 The pitch-feature exponents of the each term are as follows:-

4.11 (a) TONE-1:-

A fall in pitch followed by a rise is the most characteristic feature of this tone.

The fall in pitch starts from a little above the mid level, falls to low where it may remain level for some time, and then rises to about mid level again. The rise in all the cases does not necessarily reach the same level as that of the beginning point.

In a monosyllabic word the fall and the rise in pitch is a feature of the same syllable. The rise towards the end of the word is more distinct in the words with long vowels as in 'par' (burden) cf. 'pər' (fill in). In closed monosyllabic words the rise is more clearly heard than in open monosyllabic words. Thus the rise in pitch, after an initial fall, is more clearly perceptible in 'tir' (placid, courageous) than in 'ti' (daughter).

Either of the two syllables can be the stressed syllable in a disyllabic word. The unstressed syllable in such cases has different pitch possibilities. If it precedes the stressed syllable, its pitch is at the same level as that of the beginning point of the stressed syllable. Thus a word like 'kə_əra' (get ^{el.}chisled) with ultimate syllable stressed has a pattern like  (see table 4.4 also). But if such a syllable follows the stressed syllable in

the word, the rise in pitch is a feature of this syllable as in example (8). In some cases, the pitch of an unstressed syllable following a stressed syllable may be at the same level as that of the end point of the latter, as in examples (14), (24), (25). The fall and rise in pitch is not always a feature of the stressed syllable as will be clear from some examples of Tone-1 words illustrated in table 4.1 below.

In trisyllabic words like 'pəŋgura' (cradle), —V where the penultimate syllable is the stressed syllable, the pitch of the initial syllable is at the same level as that of the beginning point of the stressed syllable. The rise in pitch in such a case is a feature of the ultimate unstressed syllable, the fall in pitch being a feature of the stressed syllable, see table 4.4 also. The case is different if it is the initial syllable that is stressed, as in a trisyllabic word like 'tamatar' (like you). The pitch of the ultimate syllable in such a case is at the same level as that of the end point of the rise, the rise in pitch being a feature of the penultimate syllable and the fall in pitch that of the initial syllable. V—

VERBS: Causative and non-causative.

The statements made in the foregoing sections apply equally to Tone-1 verbs in their non-causative and causative forms, but this is not so for Tone-3 verbs (cf. p.81)

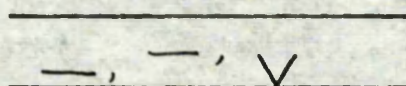
4.12 The various pitch-exponents of Tone-1 in monosyllabic and polysyllabic words are illustrated in table 4.1 below. These have been taken from examples (1) to (32)a of the non-emphatic clauses studied under the Intonation system set up in this thesis for final and non-final Panjabi clauses. Its purpose is to show the variation in pitch exponency of Tone-1. (Pitch exponents of Tone-2 and of Tone-3, excluding causative verb forms, are illustrated respectively in table 4.2 and table 4.3).

TABLE 4.1 POSITION:-

S.No.	clause type	Sentence initial		Penultimate		Sentence final	
		MONO-	POLY-	MONO-	POLY-	MONO-	POLY-
1	F	✓ ₁ ✓ ₃		✓ ₄	✓ ₂ ⁻		✓ ₅ ✓ ₆ [^]
2	HR	✓ ₇ ✓ ₉		✓ ₁₀	✓ ₈		✓ ₁₁ [/] ✓ ₁₂ ^{-/}
3	HLe	✓ ₁₃ ✓ ₁₅		✓ ₁₆	✓ ₁₄ ⁻		✓ ₁₇ ✓ ₁₈ ⁻
4	MLe		✓ ₂₁ ✓ ₂₄ ⁻	✓ ₁₉			✓ ₂₄ ⁻ ✓ ₂₅ ⁻
5	LR						✓ ₂₇ ✓ ₃₂

4.13 MONOSYLLABLES:-

As will be clear from table 4.1 above, monosyllabic Tone-1 words have the following three pitch exponents in various contexts though the falling-rising pitch pattern is the commonest:-



A low level pitch is an exponent of Tone-1 in monosyllabic words, e.g. 'pa' in each of the examples (13) and (15). The whole clause in both cases should be treated as one 'piece'. In example (13) the pitch, in order to reach the highest level and to remain as such towards the end of the clause, starts rising from the beginning. A low start is taken for pronouncing the particular word under discussion, so that the pitch of the last syllable of the following word could reach its highest point by the end. In example (15) as the pitch of the following word has to reach its maximum height to remain high level in the clause final word also, clause-initial 'pa' has a low start.

The mid level pitch is an exponent of Tone-1 in monosyllabic words, e.g. 'kər' in example (16). This variation from the commonest pitch-exponent can be accounted for by associating this with the high level pitch of the following word or the whole clause should be treated as a 'piece'. The pitch of the preceding Tone-3 word rises to

mid and that of the following Tone-2 word is high level. The pitch keeps on rising from the very beginning so as to reach the maximum height and to remain at that high level towards the end of the clause, resulting in a mid level pitch for the Tone-1 monosyllabic word in the penultimate position in a clause.

A point worth noting here is that all these three examples are drawn from H.Le. type of clause.

The most common pitch-exponent of Tone-1 in monosyllabic words, as in rest of the cases included in table 4.1 above, is a fall in pitch followed by a rise in the same word. Thus in each of the examples (1), (3), (4), (7), (9), (10), (19), none of which is an H.Le type clause, there is a fall in the pitch followed by a rise in each of the monosyllabic Tone-1 words. The rise approximately reaches the mid level so that the pitch of the following word may remain at that (mid) level or fall lower. In example (3), as the following word has a voiceless^e initial consonant, there is a break in the voicing which accounts for the gap in the continuity of the pitch pattern. The pitch thus starts rising from low to reach an approximate mid level from where a fall in the pitch of the following Tone-2 word in the clause-final position begins.

4.14 POLYSYLLABLES:-

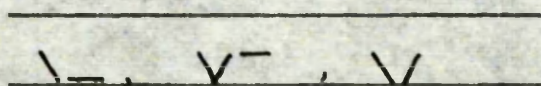
A discussion of the various pitch-exponents of

Tone-1 in polysyllabic words will be found in this section. For this purpose these words have been classified here into two main types according to the place they occupy in a clause. The two types are:-

- (i) Words in non-final positions in the clause.
- (ii) Words in clause-final position.

(i) Words in non-final positions in the clause:-

In table 4.1 above, the following three different pitch-exponents of Tone-1 have been recorded in such words:



In each of the examples (2) and (24) a polysyllabic Tone-1 word has a pitch that begins to fall from mid and ends low level. This can easily be accounted for in example (2) if the word under discussion and the following Tone-3 word are both treated as one 'piece'. The 'piece' in this case comprising two words. As the pitch of the following Tone-3 word rises from low, so the pitch of the second syllable of 'kUmda' remains low level. The fall is a feature of the stressed syllable which is also initial in the present case. In example (24), the particle 'ne' is very much a part of the Tone-1 word (see p. 93). The following Tone-2 word 'kəpre' has a voiceless initial and consequently there is a break in the voicing just after 'ne' which accounts for a gap in the continuity of the pitch

pattern. 'ne' is spoken on a pitch which is at the same level as that of the preceding syllable.

The fall and rise in pitch is a feature of the initial syllable, which is stressed, in the Tone-1 disyllabic word in example (14). The unstressed final syllable has a mid level pitch. This is accounted for by treating the two words 'kUmda' and rIa' as a two-word 'piece'. As the pitch of the following Tone-3 word is high level, in order to reach this level a rise starts from the mid level which accounts for the mid level pitch of the final syllable of Tone-1 word.

In examples (8) and (21) a fall in pitch followed by a rise in the following syllable is noticed. The fall in pitch is thus a feature of the initial syllable, which is stressed. In both the cases, the 'piece' extends to two words. 'KUmda' in (8) is followed by a Tone-3 word 'rIa' whose pitch rises from mid to high. In order to rise to high from mid, a rise in the pitch of the final unstressed syllable from low to mid is there. In (21) 'pola' is followed by a Tone-3 word 'kəl'. The pitch of the latter is rising from mid to high and this accounts for the rise in the pitch of the unstressed final syllable in the former.

(ii) Words in Clause final position:-

As will be found from table 4.1 above the following pitch-exponents of Tone-1 words have been noted:-



The fall in the pitch of the final syllable in examples (5) and (6); the rise from mid to high in the pitch of the last syllable in examples (11) and (12); the high level of pitch of the ultimate syllable in examples (17) and (18) are there because of F, HR and H.Le type clause intonations respectively. In the same way, the mid level pitch of the second syllable in (24) and (25) after a fall and rise in the pitch of the initial stressed syllable can be accounted for in terms of M.Le type of clause intonation. In (27) and (32) the rise in pitch in the final syllable is because of the LR type of clause intonation.

4.15 (b) TONE-2:-

A mid level pitch, which may rise a little towards the end of the word is the most common pitch-exponent of this tone.

The tonal contour starts at about mid level, slightly lower than the beginning point of Tone-1, remains level and ends higher than the end point of Tone-1. An initial fall in pitch followed by a rise in most of the cases, is an exponent of Tone-1, but there is no initial fall in pitch in Tone-2 words. This serves as an important cue to keep the two tones distinguished from each other.

In monosyllabic words the contour described is

a feature of the only syllable. The rise in pitch if present is more clear and distinct in monosyllabic words with closed syllables than in words with open syllables. Thus the rise in 'ap' (yourself) and 'pap' (sin) is more distinct and clear than in 'a' (come) and 'pa' (put in).

Only one syllable in Panjabi polysyllabic words is stressed. In a disyllabic word, if it is the penultimate syllable that is stress bearing, the rise if any, is a feature of the ultimate syllable; but if the ultimate syllable is stressed the rise is a feature of the same syllable, the preceding syllable having a mid level pitch. The final syllable in a disyllabic word whose initial syllable is stressed is sometimes slightly higher in pitch than the initial syllable as is shown by tonogram 2 of the word 'koṛa' (whip) ^{p123} (See Chapter II p. 23).

In trisyllabic words like (kəbutər' (pigeon), 'Iktali' (forty one), where the penultimate syllable is stress bearing, the slight rise in pitch where present is a feature of the following syllable. The initial syllable has a pitch level with the pitch of the beginning point of the stressed syllable.

4.16 In table 4.2 are illustrated some of the various pitch-exponents of Tone-2 in monosyllabic and polysyllabic words. These have been taken from the examples of non-emphatic clauses studied under the intonation system. The

TABLE 4.2 POSITION:-

S.No.	Clause type	Sentence initial		Penultimate		Sentence final	
		MONO-	POLY-	MONO-	POLY-	MONO-	POLY-
1	F	—	—	—	—	—	—
		2	5	1	6	3	4
		—	—	—	—	—	—
2	HR	8	11	7	12	9	10
		—	—	—	—	—	—
		—	—	—	—	—	—
3	HLe	14	17	13	18	15	16
		—	—	—	—	—	—
		—	—	—	—	—	—
4	MLe	22	20 25	23	24	19	20
		—	—	—	—	—	—
		—	—	—	—	—	—
5	LR	28	31	26	27	28	29
		—	—	—	—	—	—
		—	—	—	—	—	—

purpose of this table is to show the variation in the pitch-exponent^e of Tone-2.

The most common pattern as will be clear from table 4.2 above, is the mid level pitch. Although a slight rise towards the end of the word is occasionally noticed, this has not been symbolised in the pitch representations because it would make them excessively detailed.

It is important to mention here that the statements made in the following section apply to all the words of Tone-2 unlike Tone-3 causative verb forms, which need different treatment from other Tone-3 words (see p. 87).

4.17 For the purpose of discussing the pitch-exponents, Tone-2 words have been broadly classified here into two main groups. The basis of such a classification is the place that the word occupies in a clause. The two groups, as also for the Tone-1 polysyllables, are:

- (i) Words in intra clause positions
- (ii) Words in clause-final positions.

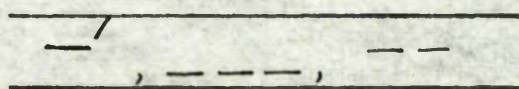
A discussion of these will follow in the sections forthcoming.

(i) Words in intra clause positions:-

(a) Monosyllables:- For monosyllabic Tone-2 words in positions other than the clause-final, a mid level pitch is the exponent, as will be clear from table 4.2 (p. 75). In examples (2), (8), (14) the pitch of monosyllabic Tone-2

word 'tar' in the clause initial position is mid level. This is associated with the initial falling pitch of the following word 'kUmda' which falls from mid to low. In examples (22) and (28) as the initial pitch of the following words is also on the same level as that of the Tone-2 words in question, no fall or rise in the pitch is noticed.

(b) Polysyllables:- Tone-2 polysyllabic words in intra clause positions have these three pitch exponents:



In example (13) the pitch of the penultimate word in the clause is rising from mid to high. I associate this high rise with the initial high level pitch of the following Tone-3 word 'rIa'. A polysyllabic word like 'namaste', as in (31) has a low level pitch and this can be accounted for in terms of a two-word 'piece' extending to the following clause-final word 'ji' which has a pitch rising from low to mid.

In the rest of the cases, the most common pitch exponent is a mid level pitch. 'taro' in each of the examples (5), (11), (17), 'kaka' in (20) and 'māne' in (25) are in the clause-initial position. The following word in each case has a voiceless initial consonant and thus there is a break in the voicing, which accounts for the gap in pitch-continuity. The pitch of 'taro' and 'kaka' remains

mid-level in all these cases. In examples (1), (6), (7), (12), (18), (23), (24) polysyllabic Tone-2 words, in intra clause positions other than the clause-initial, have mid level pitch. I have associated this with the final pitch of the preceding word and the initial pitch of the following word in each case. In examples (6), (12), (18) a voiceless initial consonant of the following (clause-final) word accounts for any gaps in the continuity of pitch pattern. In example (7) I have associated the final mid level pitch of 'tarda' with that of the initial pitch of the following word 'rIa'. In each one of the examples (23) and (24) the final mid level pitch of 'pɛsa' and 'kəpre' is associated with the initial pitch of the following word.

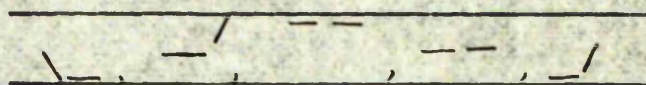
4.18 (ii) Words in clause-final position:-

(a) Monosyllables:- Only two pitch-exponents have been noted in table 4.2 above for monosyllabic Tone-2 words in the clause-final position and those are:

Mid level pitch in (21) and low-rising pitch in examples (26), (30) and (31) are the exponents of Tone-2 monosyllabic words and these are associated with the M.Le and LR terms of intonation system set up for non-final Panjabi clauses. It is worth noting here that they are simultaneously exponents of Tone-2 and Intonations M.Le

and L.R. respectively.

(b) Polysyllables:- Following are the pitch-exponents of Tone-2 in polysyllabic words, e.g. 'gIa' in examples (3), (4), (9), (10), (15), (16), (19), (20); 'kora' in example (27), and 'kaka' in example (29) in the clause-final position in each case:



A falling pitch that remains low level, as in examples (3) and (4) is an exponent of Tone-2 in polysyllabic words as also that of the F term of Panjabi intonation. High rising pitch in examples (9) and (10), high level pitch in (15) and (16) are respectively simultaneous pitch-exponents of Tone-2 in polysyllabic words and HR and HLe terms of intonation system set up in this study for final Panjabi clauses.

While a mid level pitch is an exponent of Tone-2 in polysyllabic words and also that of M.Le term of intonation, a low-rising pitch and mid level pitch are exponents of Tone-2 and LR term of Panjabi intonation system set up for the non-final clauses.

4.19 (c) TONE-3:-


A rise in pitch, followed by a slight fall in some cases, is the most common pitch exponent of Tone-3. The fall, however, does not necessarily reach the same

level as that of the beginning point of the rise.

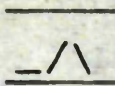
The contour of this tone is different from that of Tone-1 in that there is no initial fall in pitch. It is different from that of Tone-2 in that there is an initial rise in pitch in Tone-3 words but not in Tone-2 words.

In monosyllabic words having a vowel initially, a rise is heard, as in 'O' (she, he), 'ɔ' (that), 'e' (this), 'ar' (business), 'ɛɲ' (Hailstorm). Most of the monosyllabic words show this pattern as will be clear from table 4.3 below. The rapid rise in pitch may be due to the fact that vowels with this tone are short. The fall in pitch after the initial rise, if any, is not very distinct in open monosyllables, as in 'pa' (tamper), 'ca' (tea), 'sa' (breath), 'ša' (rich), 'de' (body). In closed monosyllables rise and fall both are clearly heard as in 'bar' (outside), 'šɛr' (city), 'mɛl' (palace), 'koɾ' (leprosy). The fall in pitch seems to be more distinct if the final consonant is voiceless and unaspirated, as in 'gak' (customer) than if the word ends in a voiced consonant as in 'lab' (profit), 'rob' (pressure).

One or the other of the two syllables in a disyllabic word is the stressed syllable. If the penultimate syllable is stressed the fall is a feature of the unstressed ultimate syllable as in 'koɾa' (leper), 'šɛrō' (from the city) see examples (5), 'phita' (tape), ɖani' (branch).


 In some cases as in the sentence-final position in F-clauses, the rise and fall is a feature of the penultimate stressed syllable, see examples (1) and (2), the pitch of the unstressed ultimate syllable in such cases being on the same level as that of the end point of the stressed syllable. If the ultimate syllable is stressed, rise and fall in pitch is a feature of this syllable, the pitch of the preceding unstressed syllable being on the same level as that of the beginning point of the stressed (ultimate) syllable, as in 'kəpa' (cotton), 'kəɾa' (pudding), 'səla' (advice).

In trisyllabic words most commonly it is the penultimate syllable that is stress bearing. The initial unstressed syllable, as in words like 'pəɾɱa' (guest), 'cəɬala' (fodder) has a pitch that is level with that of the beginning point of the penultimate syllable. The fall in pitch, after a rise in the stressed syllable, is a feature of the unstressed final syllable in the word.


VERBS: Causative and non-causative:

Statements made in the foregoing section do not apply to Tone-3 causative verb forms: they behave quite differently, and thus require a special treatment as regards pitch-exponency. It is the ultimate syllable in a disyllabic Tone-3 causative verb, that is stressed. Fall and rise in the pitch is a feature of the stressed syllable, the pitch

of the nonstressed initial syllable being on the same level as that of the beginning point of the stressed syllable.

—V In trisyllabic Tone-3 causative verbs the penultimate syllable is the stressed syllable. The fall in the pitch is a feature of this syllable rise being that of the following syllable. The initial syllable in such a case has a pitch which is level with the starting point of the pitch of the stressed syllable — (See p. 91).

—V
Various pitch representations of Tone-3 words excluding causative verb forms in different environments are given in table 4.3 below. These have been taken from the examples discussed under intonation system in Chapter II (pp. 27-43). The pitch-exponents of Tone-3 causative verb forms will be found in table 4.4.

Like Tone-1 words, Tone-3 words have also been grouped into two different groups in accordance with the position they occupy in a clause. The two are:-

- (i) words in intra clause positions,
- (ii) words in clause-final positions.

Pitch-exponents of each group are being discussed in the paragraphs that follow:-

4.191 TABLE 4.3 POSITION:-

S.No.	Clause type	Sentence initial		Penultimate		Sentence final	
		MONO-	POLY-	MONO-	POLY-	MONO-	POLY-
1	F	/ 4 / 6		/ 3 /\ 5		^ 1 ^ 2	
2	HR	/ 10 / 12		— —		— / — /	
3	HLe	/ 16 / 18		/ 15 — 17		— 7 — 8	
4	MLe	/ 19	/— 23	— 22		/— 22 /— 23	
5	LR					/ 32a 27	

4.192 (i) Words in intra-clause positions:-

(a) Monosyllables:- The following three different pitch-exponents of Tone-3 in monosyllabic words will be found in table 4.3 above:

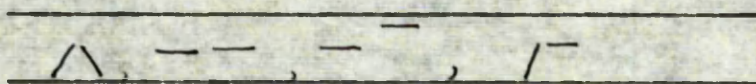
— /
— , /

In certain monosyllabic Tone-3 words the pitch-exponent is mid-level pitch as exemplified in example (9). I associate this mid level pitch with the initial mid level pitch of the following Tone-2 word ('gIa') in the clause.

In example (15) a high rising pitch is an exponent of Tone-3 in a monosyllabic word. This high rise in pitch, I have associated with the high level pitch of the following. (clause-final) Tone-2 word 'gIa'; in example (15), as in all other examples of H.Le type clauses, the rise in pitch starts from the beginning of the clause in order to reach the maximum height and then to remain high level towards the end of the clause.

In other monosyllabic words of this tone, a rise in the pitch is the most common pitch-exponent, as has been illustrated in table 4.3 above. In example (3) I associate the rise in pitch from low to mid with the initial mid level pitch of the following word. In all other cases, i.e. in each one of the examples (4), (6), (10), (12), (16), (18), (19) the rise in pitch to about mid has been associated here, with the initial pitch of the following word in each case.

(b) Polysyllables:- In the material studied under Intonation system, four different pitch-exponents have been noted for Tone-3 in polysyllabic words in intra-clause positions. It must be pointed out here that this material does not include any example of Tone-3 causative verb forms (see p. 87). The four pitch-exponents are:



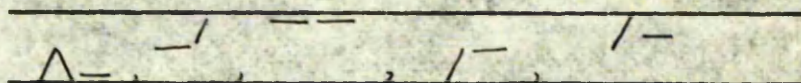
A rise in the pitch of the stressed syllable followed by a fall in the pitch of the next syllable in the word, serves as an exponent of Tone-3 in certain polysyllabic words, e.g. 'šerō' in example (5). A gap in the continuity of the pitch pattern of the clause which is noted just after this word, is due to voiceless initial consonant of the following word 'pəjji'. As exemplified in example (11), a mid level pitch is an exponent of Tone-3 in polysyllabic words in intra-clause positions. I associate this with H.R. term of Intonation. Example (17) has been drawn from H.Le type clauses and mid level pitch that rises to high level in the next syllable in the word, serves as an exponent of Tone-3 in a polysyllabic word like 'šerō'. This particular pitch-exponent of Tone-3, I have associated with the H.Le term of intonation. In example (22) the case is quite different. The initial mid level pitch of 'onU' is associated with the pitch of the preceding Tone-2 word. The initial voiceless consonant of the following word accounts for the gap found in the continuity of the pitch pattern. In example (23) a pitch that begins a low rise and ends on mid level is another pitch-exponent of Tone-3 in polysyllabic words.

4.193 (ii) Words in clause-final positions:-

(a) Monosyllables:- In the corpus there is only one example of Tone-3 monosyllabic word in the clause-final position.

Thus, only one pitch-exponent of Tone-3 in monosyllabic word has been noted, e.g. 'son' in example (32)a. The exponent is a rising pitch. It is simultaneously an exponent of Tone-3 and LR term of Panjabi intonation system.

(b) Polysyllables:- As will be clear from table 4.3 above, the following five patterns serve as exponents of Tone-3 in polysyllabic words in clause-final position:



A rising-falling pitch in the first syllable and a low level in the final is one of the exponents of Tone-3 in polysyllabic words in clause-final position. This is also an exponent of the F-term of Intonation, as in examples (1) and (2). High rising pitch in the second syllable in a disyllabic word is an exponent of Tone-3 and that of HR type of Intonation, as in examples (7) and (8). In examples (13) and (14) a high level pitch is simultaneously an exponent of Tone-3 in polysyllabic words and also that of H.Le type Intonation. An exponent of Tone-3 in polysyllabic words, e.g. 'kIa', 'ləba' as in examples (22) and (23) respectively is a pitch rising to mid in the first syllable and mid level in the following. This is also an exponent of MLe type intonation for non-final Panjabi clauses. A high rising pitch that falls to mid and remains level is

an exponent of Tone-3 in polysyllabic words, e.g. 'kora' in example (27). This pitch-pattern also serves as an exponent of LR type of Intonation.

4.194 TONE-3 VERBS: Causatives:

Unlike Tone-2 verbs, the pitch-exponents of Tone-3 verbs in their causative forms are identical with certain pitch-exponents of Tone-1 in polysyllabic words. Thus, a fall in pitch followed by a rise as a whole or a part of the word is a characteristic pitch-exponent of both Tone-1 in certain polysyllabic words and Tone-3 in causative verb forms. In addition, the Tone-3 causative verb forms are spoken with the same type of phonation as is used for Tone-1 words (Chapter V). Constricted phonation is employed for these words. All this may seem quite confusing at first sight. But it is not so, as there are certain other features that help to keep Tone-3 verbs in causative forms, distinguished from Tone-1 polysyllabic words, word-initial features being one of those. In table 4.4 initial voicing (examples 1, 3), friction (example 7), aspiration (example 6) are some of the exponents of Tone-3 but not of Tone-1 (see Chapter VI). The presence of such features is thus one of the decisive factors for the distinction of Tone-3 from Tone-1. It is true, that these word-initial features are also common to Tone-2 words. But features like pitch and phonation sufficiently distinguish Tone-3 from Tone-2.

Gill and Gleason (1963)¹ discussing causatives state that "verb stems may be inflected, or they may be extended to form causatives which are inflected. There are two types of causatives, simple and double. Some verb stems have both, some only one. In general, the simple causative is formed by adding /-a-/ the double by /-wa-/. Verbs are customarily cited in the infinitive form. By a regular rule, /-a-/ and /-wa-/ become /-ɔ-/ and /-wɔ-/ before the suffix /-na-/.² In the following examples, both the stems and the infinitive are cited. There are commonly alternations in the stems before causative extensions. These are detailed in the following paragraphs. In all types, the tone shifts to the extension, but remains the same, unless noted.³

1. In monosyllabic verbal stems with final consonants, the vowel always becomes /ə/ before causative extensions. Gemination, if present, is simplified.....

(c) /pŭn-/	/pŭn <u>na</u> /
/pəna-/	/pən <u>na</u> /
/pənwa-/	/pən <u>wəna</u> /

1. pp. 121-24.

2. /n/ represents a retroflex nasal cf. 'n' in the systematic transcription employed in this thesis.

3. Underlined in my own.

(d) High tones become low in both the causatives:-¹

ɣláb-/	/lábna/
/lábà-/	/láb̀na/
/lábwa-/	/láb̀wə̀na/."

The present treatment is different from that of Gill and Gleason in that the concepts of "tone shift" and "tone change" are not used here in this thesis. Tone is a prosody stated for the whole word as a unit. It is stress, not tone, that shifts from one place to another within a word as in the previous paragraph. The difference in the pitch-exponency of these causative forms is due to a different stress placement in the word: in causative verb forms in Panjabi, generally, the stræss is ultimate in disyllabic words and penultimate in the trisyllabics (see table 4.4). It is worth pointing out here that the different pitch-exponency in case of Tone-3 causatives is also accompanied by a constricted phonation.

To account for cases like those illustrated in table 4.4 Gill and Gleason had to make statements like "High tones become low in both the causatives", which are not needed here under the present treatment. In the tonal classification given in this thesis, Tone-3 causative forms fall into the same tone class as that of the non-causative

1. Underlining my own.

Tone-3 verb forms. The tonal classification is the same although the pitch-exponents, as also the phonation-features are appreciably different in each case.

There are certain cases, as in examples 2, 4, 5 in table 4.4 below, where even the word-initial features do not prove to be helpful for distinguishing Tone-1 words from that of Tone-3 causatives. The presence of word-initial features like plosion, affrication, and voicelessness does not provide a criterion for distinction: these features are common to all the three terms of the tonal system. In cases like these, a reference back to the non-causative form is the only decisive factor for a tonal distinction and classification.

The following are some examples of Tone-3 verbs in their non-causative and causative forms:-(see table 4.4,p.91)


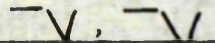
4.3 Common Pitch Patterns:-

On comparing the tables given in the previous sections, it will be found that some of the pitch-feature exponents of the three terms of the tonal system are common to two or all the three terms. In the sentence initial position the exponents of each term are quite distinct from each other. The common exponents are to be found in the medial, penultimate in case of three-word sentences- and sentence final positions only.

A mid level pitch is a feature common to all the

TABLE 4.4

TONE-3 VERBS:-

S.No.	A		B	
	Non-Causative		Causative	
Upper Lower Pitch patterns Phonation	Imperative		Imperative	
	Past		Past	
				
	Non-Constricted		Constricted	
1	'lāb' (find out)	'lābIa' (found)	'lāba'	'lābaIa'
2	'kād' (draw out)	'kādIa' (drew out)	'kāda'	'kādaIa'
3	'bānn' (tie)	'bānIa' (tied)	'bāna'	'bānaIa'
4	'cār' (climb)	'cārIa' (climbed)	'cāra'	'cāraIa'
5	'pār' (read)	'pārIa' (read)	'pāra' (teach)	'pāraIa'
6	'khol' (open)	'kholIa' (opened)	'khUla'	'khUlaIa'
7	'sūg' (smell)	'sūgIa' (smelt)	'sūga'	'sūgaIa'

three terms in certain circumstances, as is clear from examples (16), (20), and (9). A point worth mentioning, however, is that these words are not in equivalent conditions, the environment in each case being different from the others.

(i) Tone-1 and Tone-2:- In each of the examples (16) and (18) it will be noticed that in the penultimate position there are respectively Tone-1 and Tone-2 words having a mid level pitch.

(ii) Tone-1 and Tone-3:- In examples (16) and (9) respectively 'kər' (home) and 'šer' (city) are in penultimate position both having a mid level pitch.

(iii) Tone-2 and Tone-3:- In the penultimate position in examples (20) and (9) there are respectively Tone-2 and Tone-3 monosyllabic words sharing the same pitch-exponents. In examples (18) and (11) there are Tone-2 and Tone-3 disyllabic words having identical pitch-features. In the sentence-final position the pitch-features shared by Tone-2 and Tone-3 words will be found in examples (9), (10) and (7), (8) the pitch in each case rising from mid to high. In HLe clauses, as in examples (15), (16) and (13), (14) Tone-2 as well as Tone-3 words have identical pitch-exponents.

(iv) Tone-1 and Tone-3 causatives:- Tone-3 causative verb forms have pitch-features which are identical with those of certain features of Tone-1 in polysyllabic words. A fall in pitch followed by a rise as a whole or a part of the

word is thus, a common pitch exponent of these words. In table 4.4 under column B, there are examples of Tone-3 verbs in the causative forms sharing the same pitch-exponents as that of certain polysyllabic Tone-1 words.

4.3 PARTICLES:- An important point worth mentioning here is that particles like 'ne', 'nu', 'da' etc. in Panjabi can not be given any particular tonal class because the pitch of these varies according to the pitch of the word in which these particles occur. One such case has been noted in example (24). In this case the pitch of 'ne' is on the same level as that of the preceding syllable in the Tone-1 word. In example (25) 'ne' is a part of the Tone-2 word 'māne' and thus has a pitch in accordance with the pitch of the word it is in. The pitch of the particle 'da' in a Tone-3 word like 'monida' (of Mohni) is on the same level as that of the end point of the preceding syllable in the word.

Patch-patterns of Tone-1, Tone-2 and Tone-3 words with a particle respectively are:-

1 'tobine' (washerman -).

2 'māne' (mother -)

—
— —
—

3 'monida' (of Mohni)

—
/ \ —
—

CHAPTER V

PHONATION-FEATURES

5.0 Attention in this chapter will be focused on the phonation-features of Panjabi speech. One of these features is peculiar to certain dialects of Panjabi like, Majhi, Doabi, Puadhi and is not found in other languages that are spoken in the areas surrounding Panjabi speech-area. Thus one does not find a constricted type of phonation in languages like Haryanwi, Hindi, Urdu etc., though it is present in Dogri, Lahanda etc. Phonation-features are one of the most characteristic among the various phonetic exponents of the three terms of the tonal system stated in this thesis. They are associated with the pitch-feature exponency and serve as important cues for keeping the different terms of the system distinct from one another.

5.1 In normal Panjabi speech, two types of phonation are employed by the native speakers. For the purpose of this study the two types have been termed:

- (1) Constricted
- (2) Non-Constricted

5.2 (1) Constricted-Phonation:- The characteristics of this

type are a "sepulchral" voice,¹ pronounced with lowering^e of the larynx usually accompanied by relatively low pitch. A considerable amount of constriction in the larynx is also felt. Apart from these, "something else" also happens in the laryngeal cavity which, it has been found hard to establish.² Attempts were made by the present author to establish this "something else" instrumentally but without any significant success. This type of phonation serves as an exponent of Tone-1 words, causative and non-causative verbs inclusive, and also that of Tone-3 causative verb forms.

5.21 The Sound Spectrograph was not found to be very helpful in this respect. While I was working on this problem here in London, work on a similar problem in Gujarati was being carried out at the same time, in Copenhagen by Prof. Eli-Fischer Jørgensen and under her guidance by R.V. Dave. R. V. Dave (1967, p. 126) found, "no constant and regular differences between the formant frequencies of clear and murmured vowels. But" he states, "many times the formants of the murmured vowels are higher than those of the clear vowels. The difference is, however, so small that one cannot

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1. For the use of this term I am indebted to Prof. E.J.A. Henderson. See Henderson (1952 : 151).
 2. A tape recording of Panjabi utterances has been submitted to the Departmental Library of Phonetics Department, School of Oriental and African Studies, University of London.

take this into account. The overlapping is obvious". Prof. Eli-Fischer Jørgensen (1967, p. 66) also reached the same conclusion and stated, "Dave did not find any consistent differences between the formant frequencies of clear and murmured vowels. My measurements have confirmed this result". The search was abandoned only after hearing from Copenhagen. My measurements and results are in conformity with those of the aforesaid scholars. Out of a large number of spectrograms obtained for the purpose, only a dozen are being included in this thesis (see Appendix C pp. 147-53). The only difference found in the spectrograms of constricted and non-constricted utterances was in the degree of darkness of the formant bands, which does not help one to establish precisely the difference in the overall visual representation solely due to this phonation-type.

An experiment suggested by Mr. J. Carnochan was tried. A disyllabic Tone-1 word 'koṛa' (horse) as one-word sentence was spoken with three different intonations: falling, low-rising and high-rising. Each time the utterance was fed into a K-type SONOGRAPH and a broad band spectrogram obtained keeping the mark-level constant. The utterances were made in a random order and measurements were obtained from the spectrograms of each type separately. On comparison, it was found that apart from a slight difference in the degree of darkness of the formant bands there were

no grounds for statements about any difference due to a constricted phonation. It is perceptually established that the amount of constriction present, if any, with a high-rising intonation is the minimum in such utterances. But on the basis of these results nothing could be established (See sgms 10, 11, 12 pp.152-53).

5.22 The Electro-aerometer was also tried in the hope that there might be something to do with the amount of air required to pronounce words with constricted phonation. The results, contrary to expectations, were not encouraging in this case either. A disyllabic Tone-1 word 'koṛa' (horse) was pronounced respectively with falling and high rising intonation and airflow measurements recorded each time. The purpose of this experiment was to find out the difference, if any, in the amount of air used in each case. The degree of constriction in the larynx is maximum with a falling intonation whereas it is quite the reverse with high-rising intonation. It is perceptually true, that the amount of constriction is the least possible when this word is spoken with a high-rising intonation. But no appreciable and consistent difference in the amount of air used could be found from the tracings obtained. (See Amr.¹ 7, 7a). The same experiment was tried with Tone-2 and Tone-3 words also

1. Amr: Electro-Aerometer Readings (see p. 157).

but again without an appreciable degree of success. (see Amr. 8, 8a, 9, 9a Appendix pp. 158-9).

5.23 The effect of this phonation type is felt most of all on the stressed syllable in the word, but the unstressed syllable in the word, if any, is not entirely without such effect. The whole word as a unit is influenced by this phonation type. Long vowels in word final position following nasal consonants in Tone-1 words are not nasalised. Cf. Tone-2 and Tone-3. As will be clear from N-tracing in Amr. 4 (p. 156) for 'na' (have a bath) the vowel is not entirely free from nasalisation. There is still some air passing through the nasal cavity after plosion for 'n'. The soft palate thus does not close simultaneously with the release of 'n' in this particular case. The N-tracing shows the continuation of nasality for approximately the same amount of time as is required for the closure part of 'n'. Perceptually, however, the vowel does not sound nasalized. Some other examples are:

- (i) 'cəna' (the river Chenah)
- (ii) 'kUma' (show round)
- (iii) 'pUna' (get parched).

5.3 (2) Non-Constricted:- For words other than those mentioned in the foregoing paragraphs in this chapter a non-constricted or "clear" phonation is used by Panjabi speakers. The term "clear" is used here as opposed to "constricted".

This type of phonation can be heard in other languages like Hindi, English, Urdu. But it is not the only type that is used by all the speakers of these languages. Other types may also be expected from minority speakers, one such being with a so called "creaky voice"¹ quality.

Non-constricted phonation is a feature of Tone-2 words as also that of Tone-3 words other than causative verbs. Tone-3 words are pronounced with raising of the larynx usually accompanied by relatively high pitch. In the pronunciation of Tone-2 words upward or downward movement of the larynx is not noted except in the clause-final positions.

1. Abercrombie, p, 101.

CHAPTER VI

WORD-INITIAL and WORD-FINAL FEATURES¹

6.0 Word-initial and word-final features will be discussed in this chapter. The word-initial features will be stated as exponents of each of the terms of the tonal system although some of these can be used as criteria for a tonal distinction as well. Only one of the word-final features of Tone-1 and Tone-2. will be discussed as it serves as a criterion for distinguishing these two terms of the system from the third, i.e. Tone-3. It has already been noted (Chapter IV p. 87) that word-initial features help to keep Tone-3 causative verbs distinct from Tone-1 polysyllabic words. Whereas phonation and pitch exponents are the same for Tone-1 in polysyllabic words and for Tone-3 in causative forms, word-initial features are the only features that can fruitfully be employed for distinguishing one from the other.

6.1 In the following paragraphs will be found word-initial features stated as exponents for Tone-1, Tone-2, and Tone-3 respectively:-

1. I have followed Sprigg (1955) in this Chapter.

6.11 Tone-1

The exponents are:-

- (i) Voicelessness + non-aspiration (+ plosion/
affrication) p/t/ṭ/k/c
(ii) Nasality m/n¹

Examples:-

- | | | | | | | | |
|-----|---|--------|-------------|-------------------|---|--------|------------|
| (i) | p | 'para' | (heavy) | (ii) ² | m | 'moṭa' | (fat) |
| | t | 'tobi' | (washerman) | | n | 'nera' | (darkness) |
| | ṭ | 'ṭaṇi' | (group) | | | | |
| | k | 'koṛi' | (mare) | | | | |
| | c | 'caru' | (broom) | | | | |

6.12 Tone-2

The following Exponents may be stated for Tone-2 words:-

- (i) Vocalic articulation I/i/e/ɛ/ə/a/ɔ/o/U/u
(ii) Voicelessness + non-aspiration (+ plosion/
affrication) p/t/ṭ/k/c
(iii) Voicelessness + aspiration (+ plosion/affrication)
ph/th/ṭh/kh/ch
(iv) Voicelessness (+ friction) s/š

1. Word initial nasality has been found in a very few Tone-1 words.
2. Long vowels following nasals in word final position are not nasalized in Tone-1 words. (Chapter V, p. 99)

- (v) Vo[̣]ce (+ lateral occlusion) l
 (vi) Nasality m/n
 (vii) Voice (+ plosion/affrication) b/d/ḍ/g/j
 (viii) Voice + flap + alveo[̣]clarity r
 (ix) Glottality (+ friction) h.

Examples:-

- | | | | |
|-------|-----|----------|-----------------------|
| (i) | I | 'Iktali' | (forty one) |
| | i | 'id' | (Muslim festival) |
| | e | 'edā' | (like this) |
| | ɛ | 'ɛ tbar' | (Sunday) |
| | ə | 'əmrud' | (Guava) |
| | a | 'alu' | (Potatoe) |
| | ɔ | 'ɔkha' | (difficult) |
| | U | 'Upp̣ər' | (upstairs) |
| | u | 'una' | (not completely full) |
| (ii) | p | 'para' | (mercury) |
| | t | 'tara' | (star) |
| | ṭ | 'ṭopi' | (cap) |
| | k | 'kela' | (banana) |
| | c | 'cara' | (fodder) |
| (iii) | ph | 'phora' | (boil) |
| | th | 'thali' | (plate) |
| | tḥ | 'tḥana' | (Police station) |
| | kh | 'khota' | (ass) |
| | ch | 'chala' | (boil) |

(iv)	s	'salu'	(scarf)
	ʃ	'ʃam'	(evening)
(v)	l	'lara'	(husband)
(vi) ¹	m	'mera'	(mine)
	n	'nɔkar'	(servant)
(vii)	b	'beri'	(boat)
	d	'duja'	(second)
	ɖ	'ɖaku'	(Robber)
	g	'goli'	(shot)
	j	'jori'	(pair)
(viii)	r	'roṭi'	(bread)
(ix)	h	'har'	(garland)

6.13 Tone-3

For Tone-3 words the following word-initial features may be stated as exponents:-

- (i) voicelessness + non-aspiration (+ plosion/
affrication) p/t/ṭ/k/c
- (ii) voicelessness + aspiration (+ plosion/affrication)
ph/th/ṭh/kh/ch
- (iii) voicelessness (+ friction) s/ʃ
- (iv) voice (+ plosion/affrication) b/d/ɖ/g/j
- (v) voice (+ lateral occlusion) l

1. Long vowels following nasals in word final position are nasalized in Tone-2 words if stress is not ultimate, e.g. 'səmã' (time) cf. 'səma' (spread).

- (vi) vocalic articulation I/e/ɛ/ə/a/ɔ/o/U
 (vii) Nasality m/n
 (viii) voice + flap + alveolarity r
 (ix) Glottality (+ friction) h

Examples:-

(i)	p	'pɪr̥a'	(stool)
	t	'ti'	(thirty)
	t̥	't̥ani'	(branch)
	k	'kora'	(leper)
	c	'ca'	(tea)
(ii)	ph	'phai'	(noose)
	th	'thor̥a'	(less)
	ṭh	'ṭhənd̥'	(cold)
	kh	'khu'	(well)
	ch	'chɪat̥'	(sixty six)
(iii)	s	'san'	(Bull)
	š	'šer'	(city)
(iv)	b	'bela'	(free, unemployed)
	d	'dar̥'	(tooth)
	ḍ	'ḍud̥'	(one and a half)
	g	'gura'	(dark) Adjective
	j	'jib'	(tongue)
(v)	l	'lab'	(profit) Noun
(vi)	I	'Il'	(a bird)
	e	'edər'	(on this side)

	ɛ	'ɛ̃'	(hailstorm)
	ə	'ə̃na'	(blind man)
	ʌ	'ar'	(work)
	ɔ	'ɔ'	(that)
	o	'o'	(he, she)
	U	'Ubbər'	(jump)
(vii) ¹	m	'moḍa'	(shoulder)
	n	'nɛ̃ila'	(nine of cards)
(viii)	r	'rob'	(pressure)
(ix)	h	'haṛ'	(name of a month)

6.2 WORD-FINAL FEATURES

The presence of voicelessness + aspiration (+ plosion or affrication) ph/th/ṭh/kh/ch word-finally is an exponent of Tone-1 and of Tone-2. The examples are:-

	Tone-1		Tone-2
-ph	'paph' (steam)		'saph' (clean)
-th	'nath' (master)		'sath' (with)
-ṭh	'cuṭh' (lie)		'paṭh' (lesson)
-kh	'kokh' (information)		'lakh' (lakh)
-ch	'nIch' (sneeze)		'mUch' (moustache)

1. Long vowels, as in Tone-2 words, in word final position following nasals are nasalized if the ultimate syllable is not stressed, e.g. 'nā' (no), 'kanā' (reed) cf. 'gUna' (sin).

6.3 CRITERIA:-

(a) The presence of the following word-initial features provides a criterion for distinguishing Tone-2 and Tone-3 words from Tone-1 words. Thus these features are exponents of these two terms of the tonal system but not of Tone-1.

(a) Non-Tone-1 features:-

- (i) Vocalic articulation
- (ii) Voice (+lateral occlusion)¹
- (iii) Voice (+ plosion/affrication)²
- (iv) Voice + flap + alveolarity³
- (v) Voicelessness + aspiration (+ plosion/affrication)
- (vi) Voicelessness + friction
- (vii) ~~G~~¹ottality + friction.

(b) The following feature is an exponent of Tone-1 and of Tone-2 words but not of Tone-3:-

- (i) Voicelessness + Aspiration (+ plosion/affrication) word-finally.

(c) Close vocalic articulation e.g., i/u is an exponent of Tone-2 only and its presence in word-initial position helps to keep Tone-2 words distinguished from those of the other two terms of the tonal system.

1. Variation has been noted in my wife's speech. She pronounces 'lɪa' (bring) as Tone-1 word whereas in my speech it is Tone-2.

2. 'dɔr' (run) and 'bɛɖɖa' (big) are exceptions.

3. Some speakers may be found who pronounce some words with initial 'r' e.g. 'rat' (night), 'rani' (queen) etc.

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APPENDIX A

DURATION (in centi seconds)

TABLE 3.1 SENTENCE INITIAL POSITION:-

S.No.	Word and Tone	Non-Emphatic	Emphatic	more/less		Examples	
				+	-	Non-	/Emph.
(i)	'pa'	1	24	34	+ 10	(1)	(33)
(ii)	'pa'	1	34	30	- 4	(3)	(34)
(iii)	'tar'	2	32	32	+ 0	(2)	(35)
(iv)	'taro'	2	40	46	+ 6	(5)	(36)
(v)	'o'	3	20	26	+ 6	(4)	(37)
(vi)	'o'	3	16	25	+ 9	(6)	(38)

Tgm shows less
contrary to
perception.

TABLE 3.II PENULTIMATE POSITION IN THREE WORD SENTENCES:-

S.No.	Word and Tone	Non-Emphatic	Emphatic	more/less		Examples	
				+	-	Non-	/Emph.
(i)	'kər'	1	33	65	+ 32	(4)	(39)
(ii)	'kUmda'	1	54	64	+ 10	(2)	(40)
(iii)	'tərda'	2	50	55	+ 5	(1)	(41)
(iv)	'teri'	2	30	40	+ 10	(6)	(42)
(v)	'šer'	3	44	46	+ 2	(3)	(43)
(vi)	'šerō'	3	42	46	+ 4	(5)	(44)

Closure
period for 'k'
most notable

TABLE 3.III SENTENCE FINAL POSITION

(i)	'pəjji'	1	40	52	+ 12	(5)	(45)
(ii)	'pabia'	1	60	72	+ 12	(6)	(46)
(iii)	'gIa'	2	22	30	+ 8	(4)	(47)
(iv)	'gIa'	2	30	34	+ 4	(3)	(48)
(v)	'rIa'	3	22	34	+ 12	(1)	(49)
(vi)	'rIa'	3	22	36	+ 14	(2)	(50)

RELATIVE LOUDNESS (in decibels)

TABLE 3.IV SENTENCE INITIAL POSITION:-

S.No.	Word and Tone	Non-Emphatic		Emphatic		Difference + -		Examples
		1st Syll	2nd	1st syll	2nd syll	1st syll	2nd syll	
(i)	'pa'	1	42	46		+4		(1) (33)
(ii)	'pa'	1	43	47.5		+4.5		(3) (34)
(iii)	'tar'	2	46	48		+2		(2) (35)
(iv)	'taro'	2	41	43	41	+2	+1	(5) (36)
(v)	'o'	3	45	49		+4		(4) (37)
(vi)	'o'	3	45	49		+4		(6) (38)

TABLE 3.V PENULTIMATE POSITION IN THREE WORD SENTENCES:-

S.No.	Word and Tone	Non-Emphatic		Emphatic		Difference ₊		Examples	
		1st Syll	2nd	1st syll	2nd syll	1st syll	2nd syll	non-	emph.
(i)	'kər'	1	43	47		+4		(4)	(39)
(ii)	'kūmda'	1	40	44	46	+4	+4	(2)	(40)
(iii)	'tərda'	2	44	47	45	+3	+4	(1)	(41)
(iv)	'teri'	2	46	46	45.5	+0	+5.5	(6)	(42)
(v)	'ṣər'	3	42.5	46		+3.5		(3)	(43)
(vi)	'ṣērō'	3	40	46	43	+6	+13	(5)	(44)

TABLE 3.VI SENTENCE FINAL POSITION:-

(i)	'pəjjī'	1	41	34	45	40	+4	+6	(5)	(45)
(ii)	'pabīa'	1	43	41	45	47	+2	+6	(6)	(46)
(iii)	'gīa'	2	41.5		48		+6.5		(4)	(47)
(iv)	'gīa'	2	45 ?		47		+2		(3)	(48)
(v)	'rīa'	3	39		46		+7		(1)	(49)
(vi)	'rīa'	3	41		47		+6		(2)	(50) ^ω

PITCH (in cycles per second)

TABLE 3.VII SENTENCE INITIAL POSITION:-

S.No.	Word and Tone	Non-Emphatic			Emphatic			Difference \pm			Examples	
		B	C	E	B	C	E	B	C	E	non-	emph.
(i)	'pa'	1	115	85	110	120	85	110	+ 5	+ 0	(1)	(33)
(ii)	'pa'	1	110	90	110	120	85	125	+10	- 5	(3)	(34)
(iii)	'tar'	2	110		120	110		130	+ 0		(2)	(35)
(iv)	'taro'	2	100		120	100		130	+ 0		(5)	(36)
(v)	'o'	3	120		160	130		220	+10		(4)	(37)
(vi)	'o'	3	105		160	135		225	+30		(6)	(38)

TABLE 3.VIII PENULTIMATE POSITION IN THREE WORD SENTENCES:-

S.No.	Word and Tone	Non-Emphatic			Emphatic			Difference ±			Examples		
		B	C	E	B	C	E	B	C	E	non-	emph.	
(i)	'kər'	1	105	90	100	120	90	120	+15	+ 0	+20	(4)	(39)
(ii)	'kUmda'	1	120	80	90	120	85	120	+ 0	+ 5	+30	(2)	(40)
(iii)	'tərda'	2	90		90	100		120	+10		+30	(1)	(41)
(iv)	'teri'	2	110		140	110		160	+ 0		+20	(6)	(42)
(v)	'šer'	3	110		120	120		170	+10		+50	(3)	(43)
(vi)	'šerō'	3	110	125	110	110	150	130	+ 0	+25	+20	(5)	(44)

TABLE 3.IX SENTENCE FINAL POSITION:-

(i)	'pəjji'	1	140		80	170	90	120, 70	+30		-10	(5)	(45)
(ii)	'pabia'	1	120		70	130	80	100, 80	+10		+10	(6)	(46)
(iii)	'gIa'	2	90		80	160		70	+70		-10	(4)	(47)
(iv)	'gIa'	2	110		80	110		80	+ 0		+ 0	(3)	(48)
(v)	'rIa'	3	85	100	75	90	125	70	+ 5	+25	- 5	(1)	(49)
(vi)	'rIa'	3	100	100	80	160	160	70	+60	+60	+10	(2)	(50)

N.B.:— Beginning point (B)
Change point (C)
End point (E)

APPENDIX BI Utterance final(1) F-type

- (1) 'pa tərda rIa.' 1-2-3. Brother kept swimming.

 v - - ^ -

- (2) 'tar kUmda rIa.' 2-1-3. Tar kept roaming about.

 - \ - ^ -

- (3) 'pa šer gIa.' 1-3-2. Brother went to the city.

 v / \ -

- (4) 'o kər gIa.' 3-1-2. He went home.

 / v \ -

- (5) 'taro šerō pəjji.' 2-3-1. Taro fled from the city.

 - - / \ v \

- (6) 'o teri pabia.' 3-2-1 (2). She is your sister-in-law.

 / - - \ / \

2. H.R. Type

(7) 'pa tərda rIa?'

1-2-3 ?

(8) 'tar kUmda rIa?'

2-1-3 ?

(9) 'pa šer gIa?'

1-3-2 ?

(10) 'o kər gIa?'

3-1-2 ?

(11) 'taro šerō pəjji?'

2-3-1 ?

(12) 'o teri pabi a?'

3-2-1 ?

3. H.LE Type

(13) 'pa tərda rIa!'

1-2-3 !

(14) 'tar kUmda rIa!'

2-1-3 !

(15) 'pa šer gIa!'

1-3-2 !

(16) 'o kər gIa!'

3-1-2 !

(17) 'taro šerō pəjji!'

2-3-1 !

(18) 'o teri pabi a!'

3-2-1 !

I. M.Le-Type (Non-final)

(19) / V

'o kər gIa',

3-1-2

'o kər gIa',

3-1-2,

(20) — — — — —

'kaka pas ho gIa',

2-2-2-2,

(21) \ / — — —

'pola kəl aIa si',

1-3-2-2,

(22) — — — / —

'mē onU kIa',

2-3-3,

(23) / — — — — / —

'Onŭ pəsa tā ləba', 3-2-2-3,

(24) \ — — — — — V —

'tobi ne kəpre tā tote', 1-2-2-2-1

(25) — — — V —

'mā ne cəl tərē',

2-2-2-1

II L.R. Type (Non final)

- (26) / / / / 'che; sət̤t; ət̤h; n̄ʒ;' 2; 2; 2; 2;
- (27) \ / - - / - ¹ 'koṛa; ² koṛa; ³ koṛa;' 1; 2; 3;
- (28) - - - / 'che te tin n̄ʒ;' 2+2-2-2;
- (29) - / - - \ - 'kaka; kədō aIā.' 2; 2-2.
- (30) / - - - \ - 'mā; m̄ hUṇe aIā.' 2; 2-2-2
- (31) - - - / 'nəm̄aste ji;' 2-2;
- (32) \ / - - \ - 'poli; roṭi lIa.' 1; 2-2
- (32)a / - \ - 'son; əmb lIa.' 3; 2-2

APPENDIX C

Ø: Non-emphatic. F: Falling. HR: High-Rising. H.Le: High level. E: Emphatic.

List of Tonograms (Tgms):-

Ø. F	1.	'koṛa'	Tone-1	(horse)
	2.	'koṛa '	Tone-2	(whip)
	3.	'koṛa '	Tone-3	(leper)
	4.	'koṛae.'	Tone-1	(It is a horse)
	5.	'koṛa e.'	Tone-2	(It is a whip)
	6.	'koṛa e.'	Tone-3	(It is a leper)
	7.	'pa tərda rIa.'	1-2-3	
	8.	'tar kUmda rIa.'	2-1-3	
	9.	'pa šer gIa.'	1-3-2	
	10.	'O kər gIa.'	3-1-2	
	11.	'taro šərō pəjji.'	2-3-1	
	12.	'O teri pabia.'	3-2-1	
HR	13.	'pa tərda rIa?'		
	14.	'tar kUmda rIa?'		
	15.	'pa šer gIa?'		
	16.	'O kər gIa?'		
	17.	'taro šərō pəjji?'		
	18.	'O teri pabia?'		
HLe	19.	'pa tərda rIa!'		
	20.	'tar kUmda rIa!'		

21. 'pa šer gIa!'
22. 'O kər gIa!'
23. 'taro šerō pəjji!'
24. 'O teri pabi a!'

Emphatic:-

F Sentence-initial word emphasized:-

25. 'pa tərda rIa.'
26. 'pa šer gIa.'
27. 'tar kUmdarIa.'
28. 'taro šerō pəjji.'
29. 'O kər gIa.'
30. 'O teri pabia.'

Penultimate word in the sentence made emphatic:-

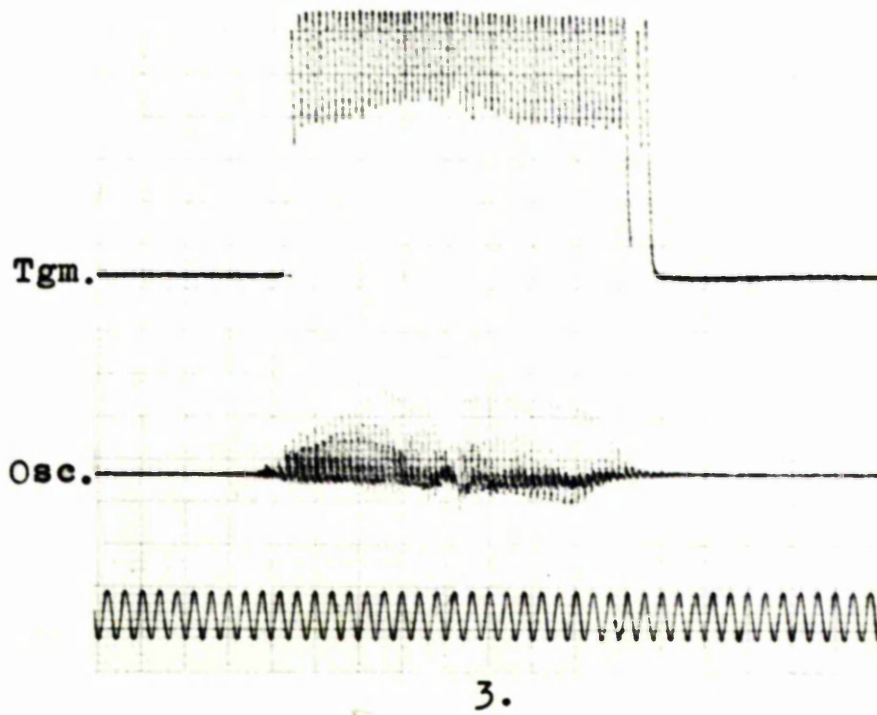
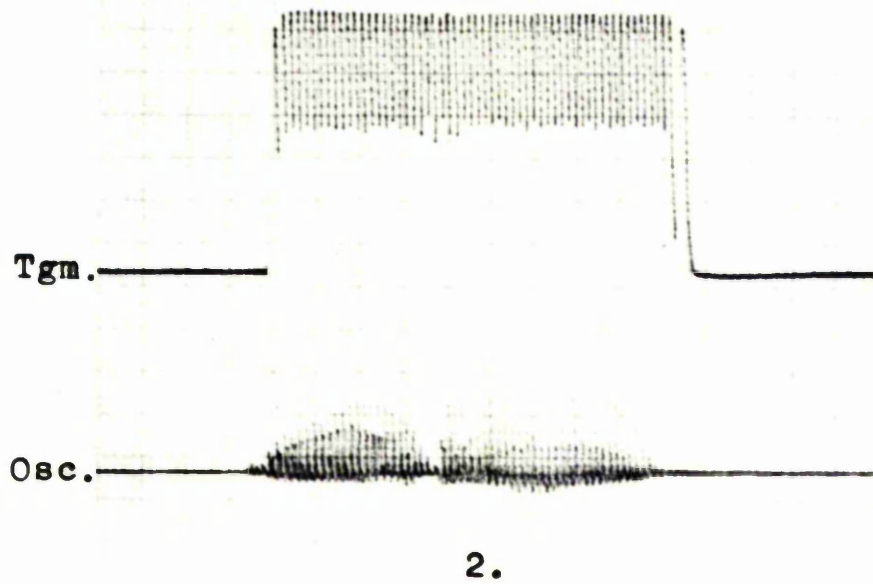
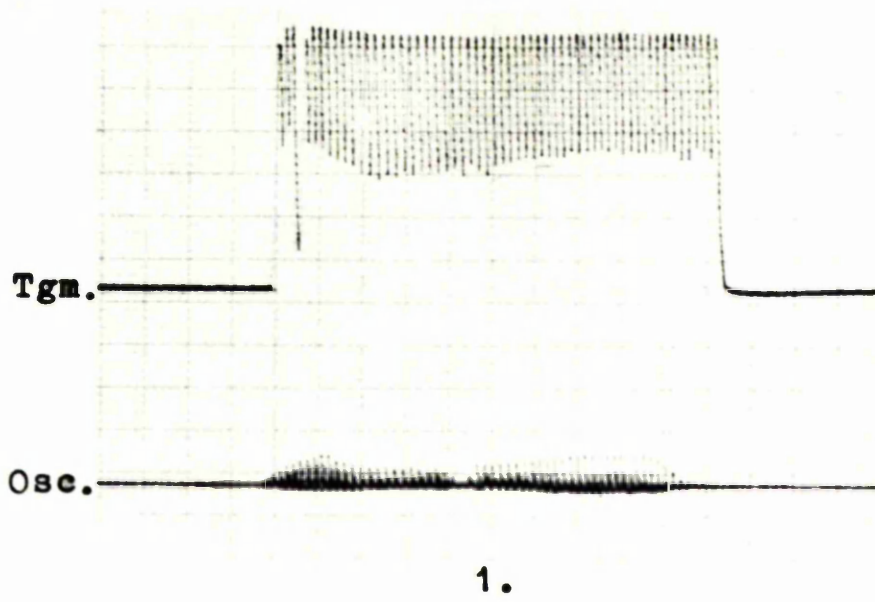
31. 'O kər gIa.'
32. 'tar kUmda rIa.'
33. 'pa tərda rIa.'
34. 'O teri pabia.'
35. 'pa šer gIa.'
36. 'taro šerō pəjji.'

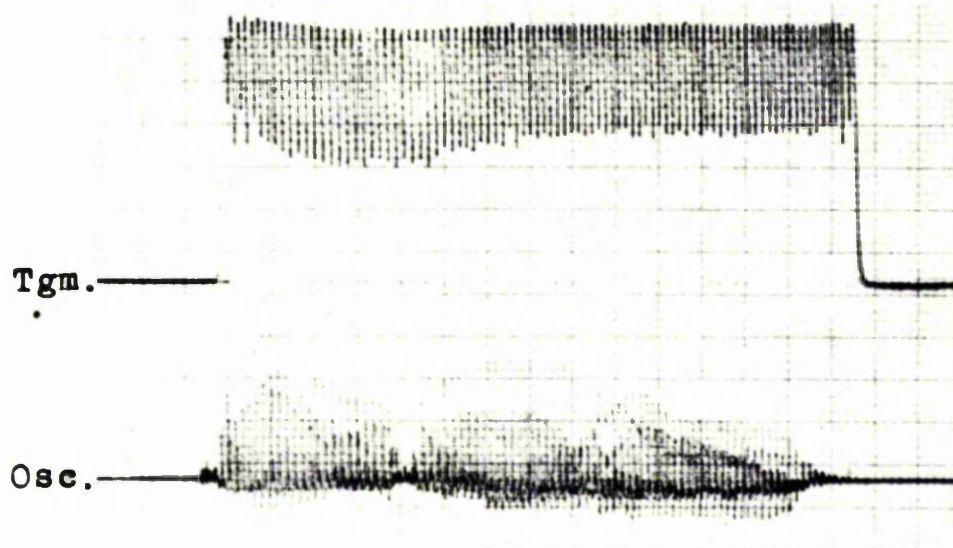
Sentence final word made emphatic:-

37. 'taro šerō pəjji.'
38. 'O teri pabia.'
39. 'O kər gIa.'
40. 'pa šer gIa.'
41. 'pa tərda rIa.'

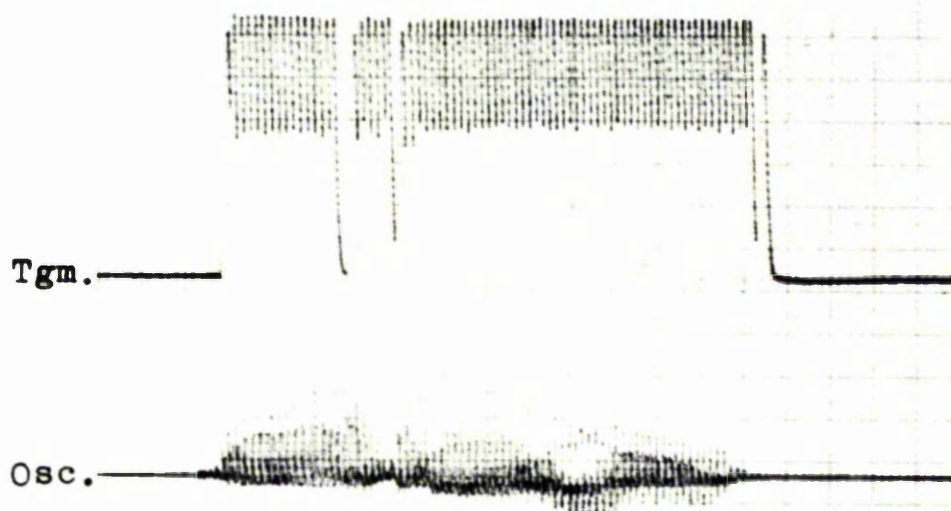
42. 'tar kUmōa ria.'

N.B. The time marker at the bottom of each page
to follow represents 50 Hzs. per second.

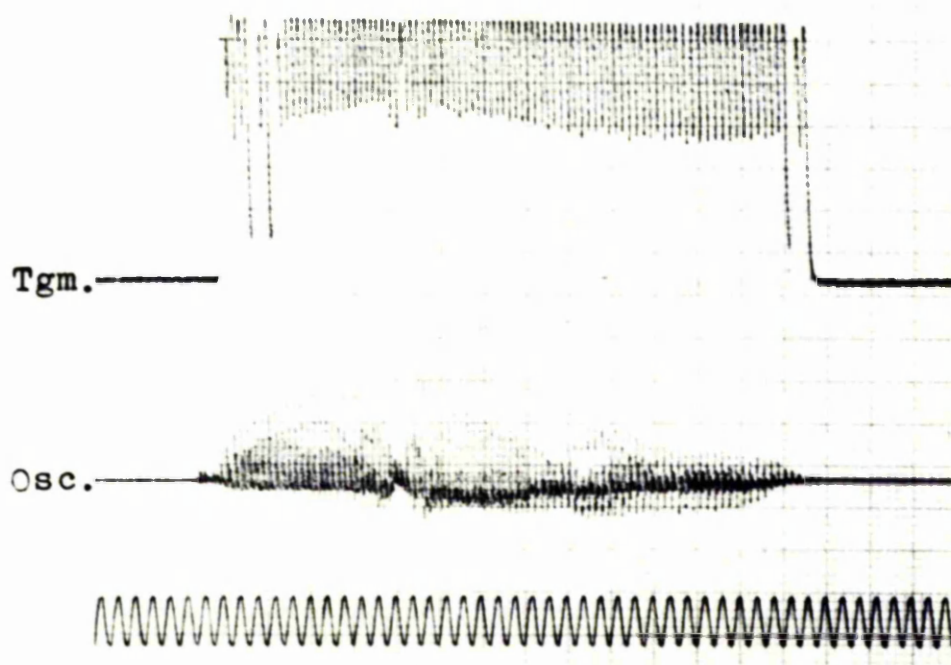




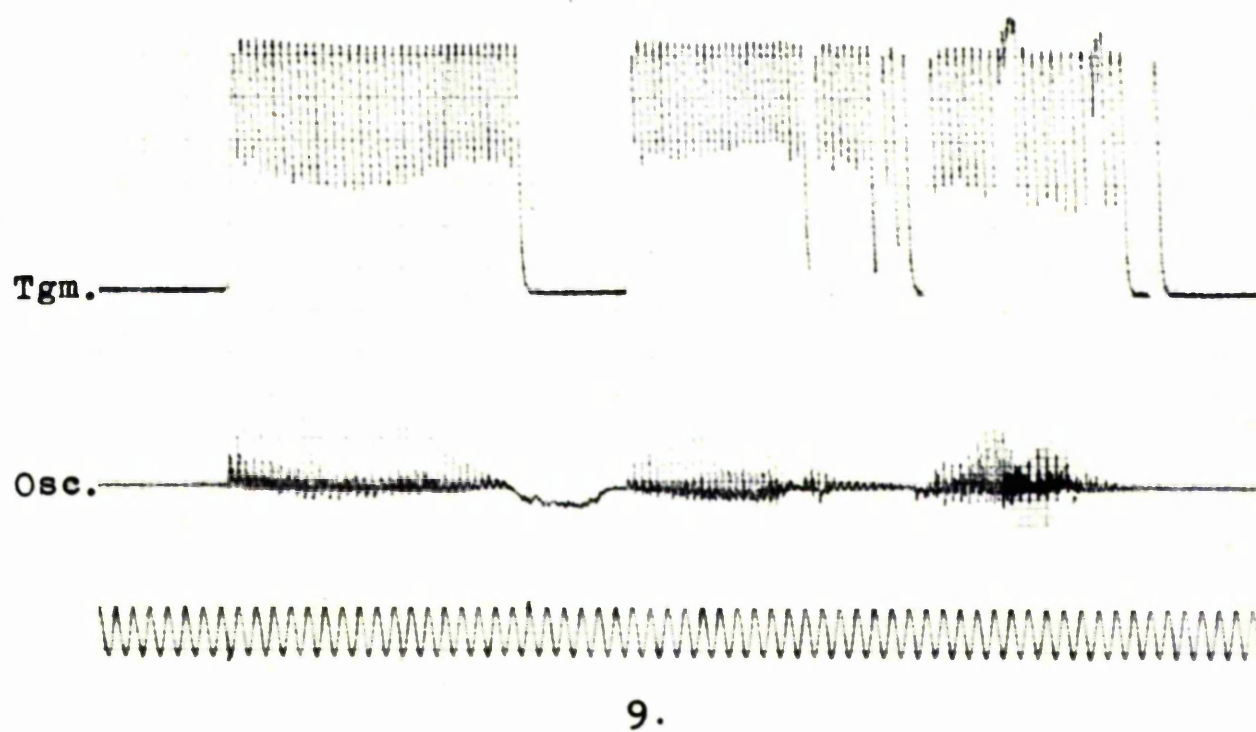
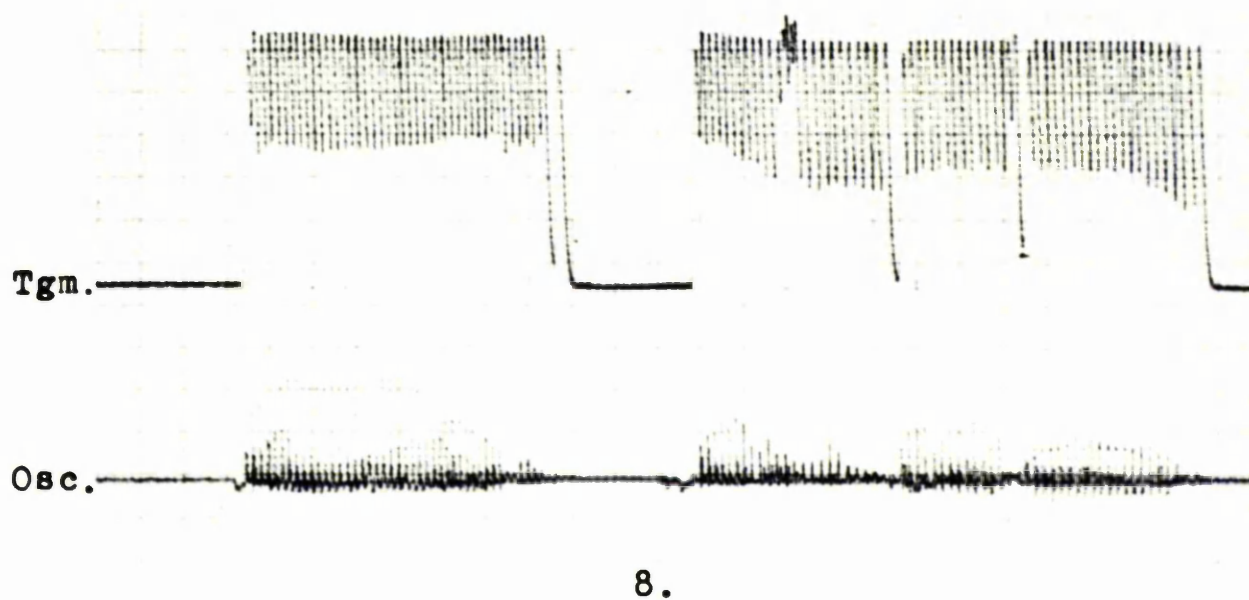
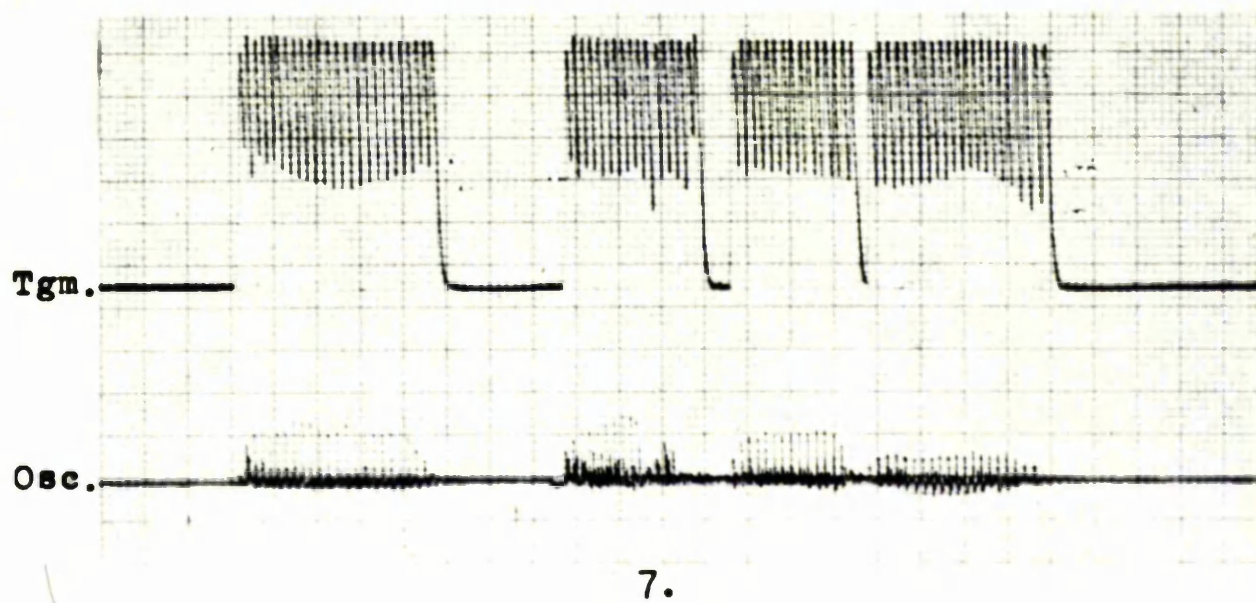
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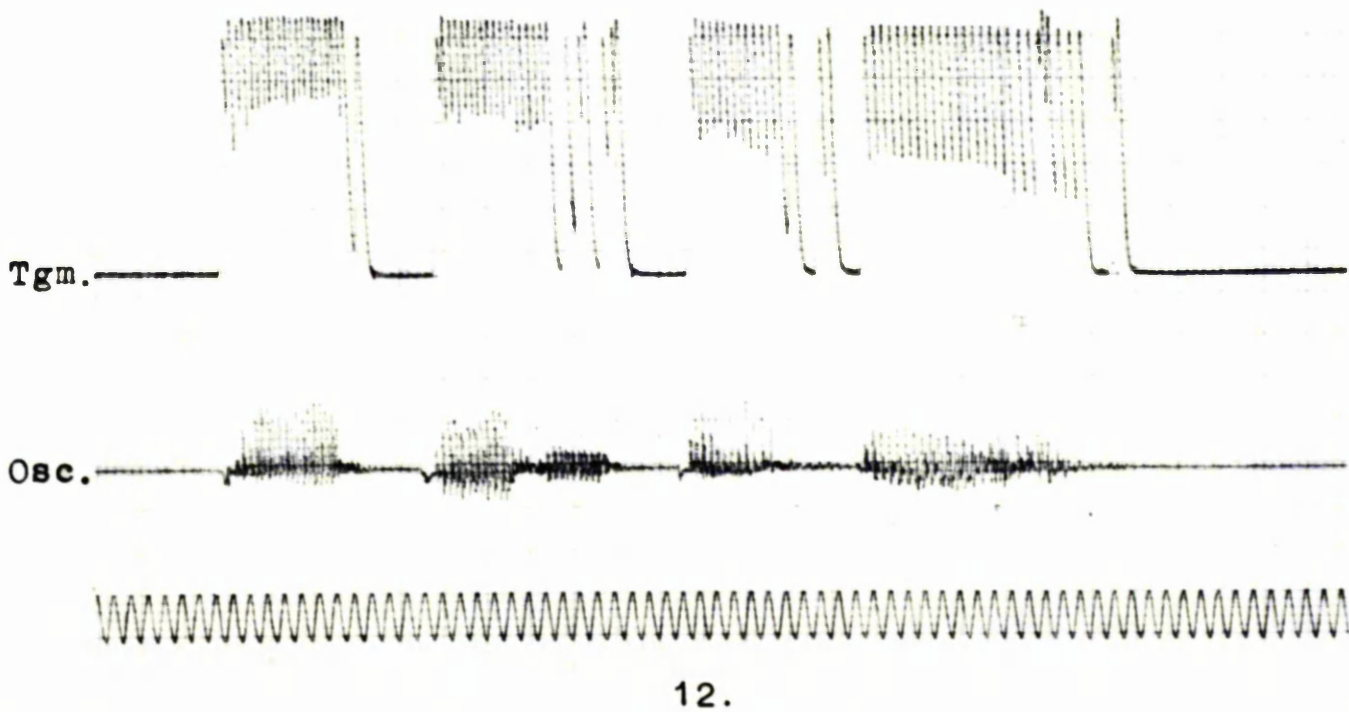
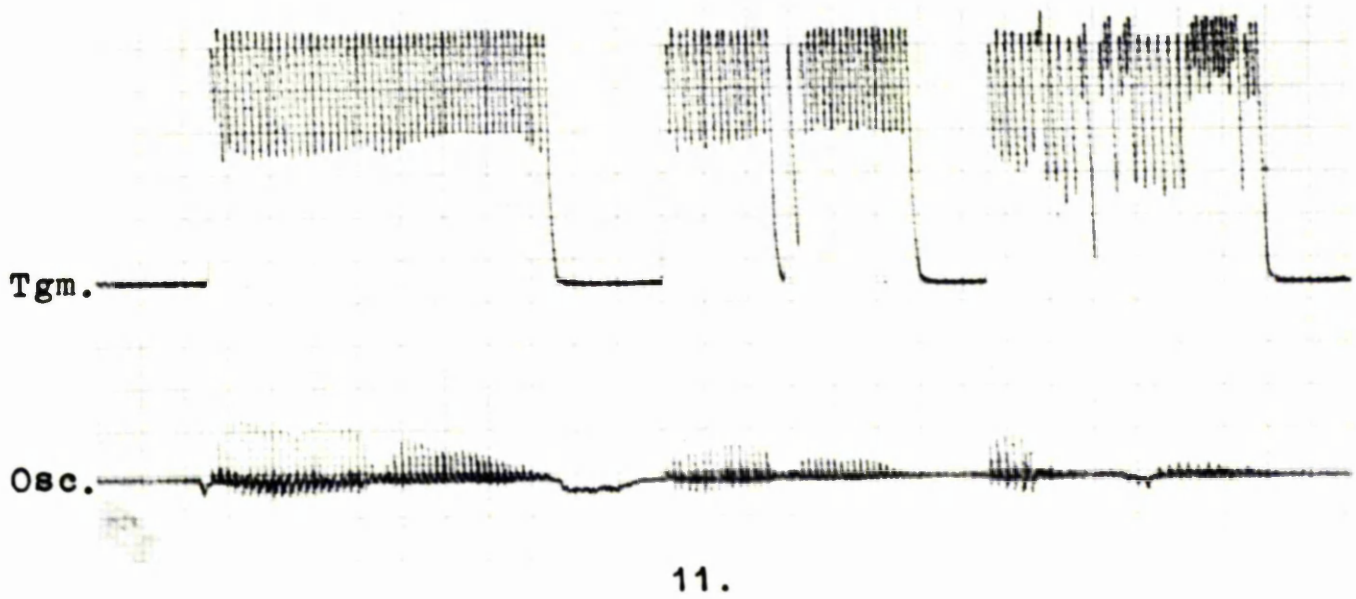
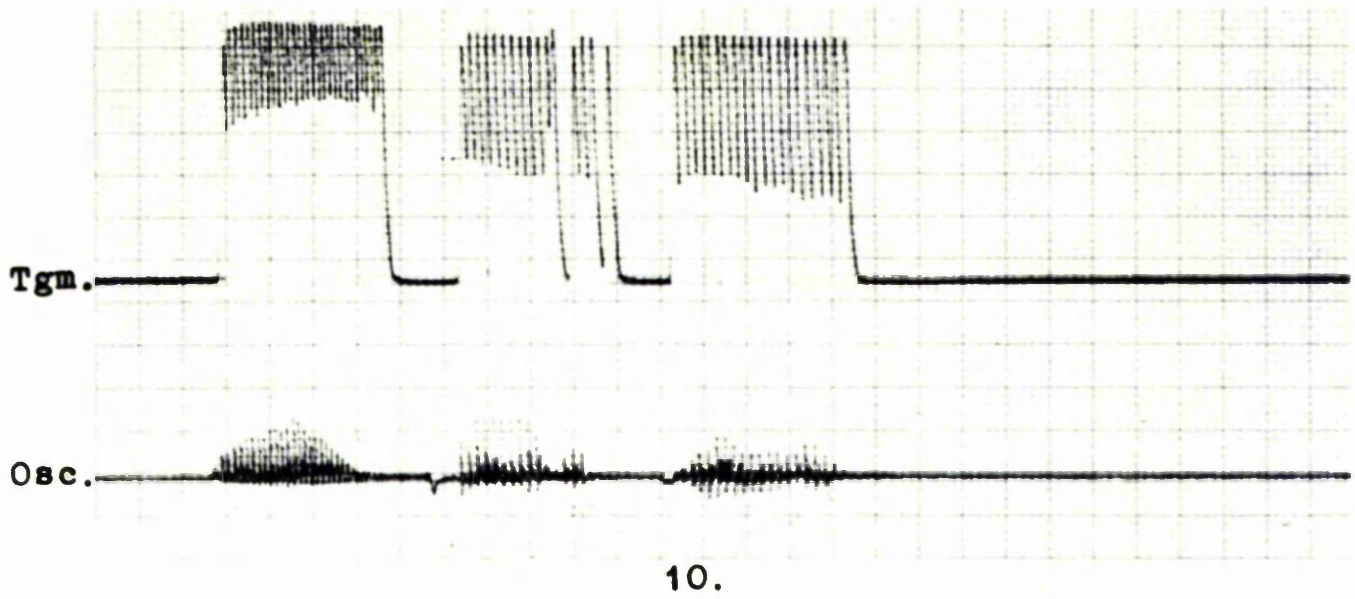


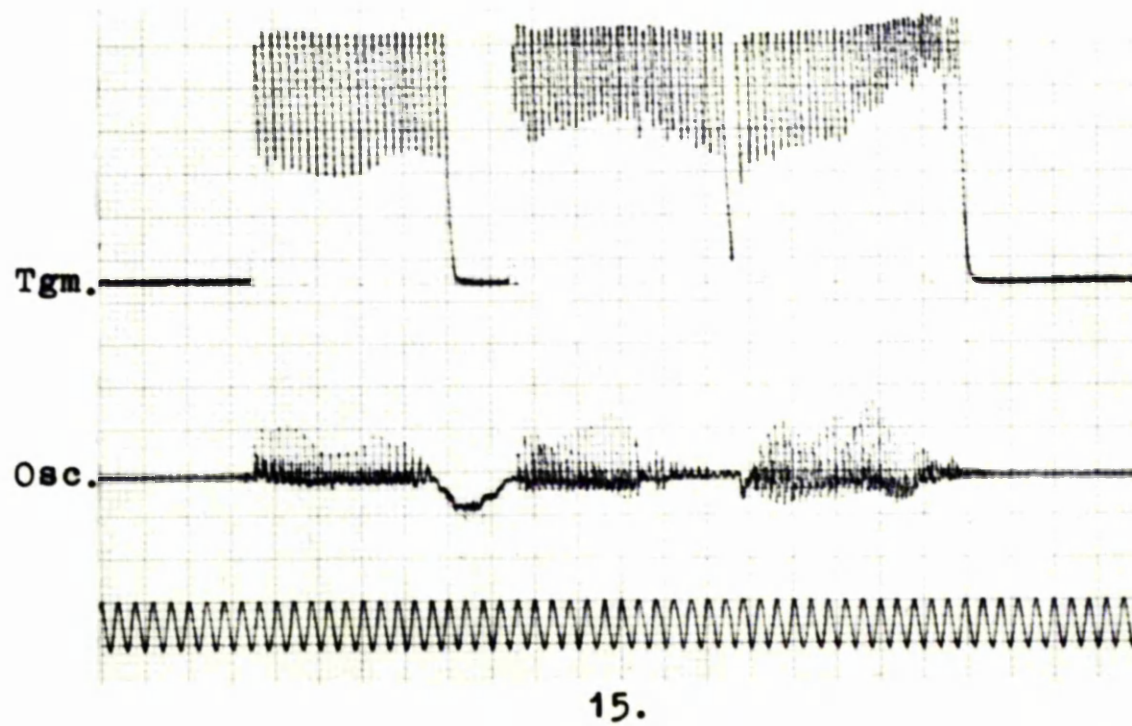
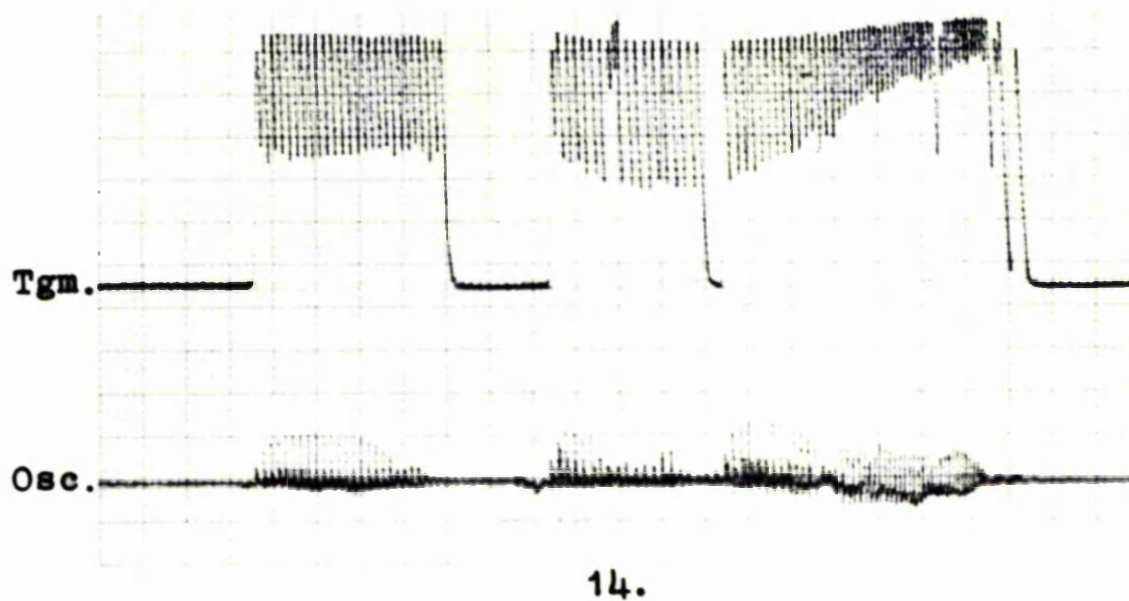
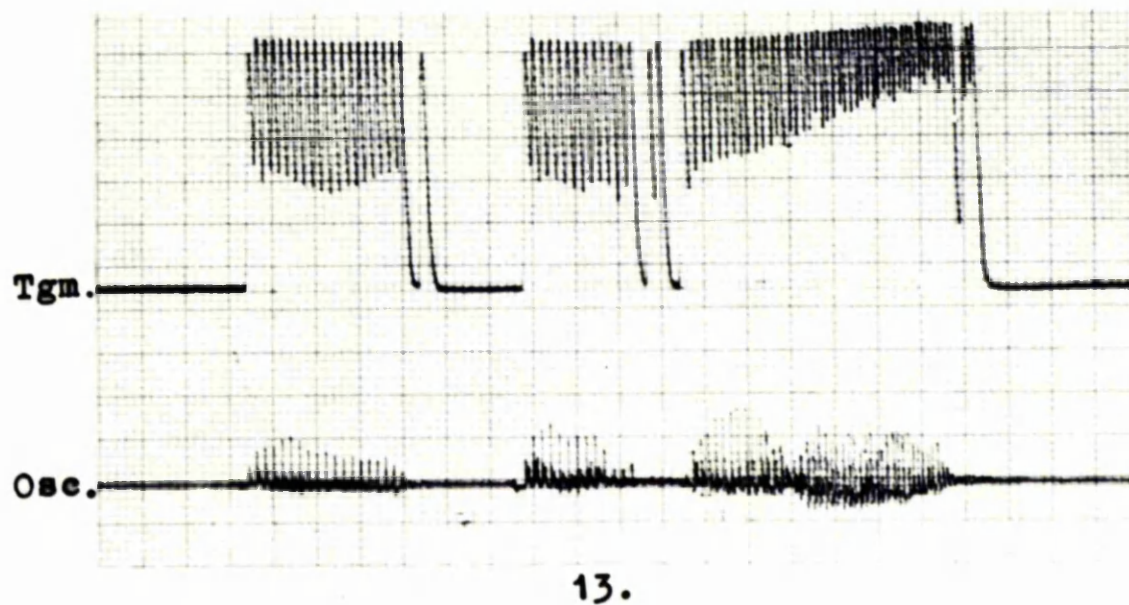
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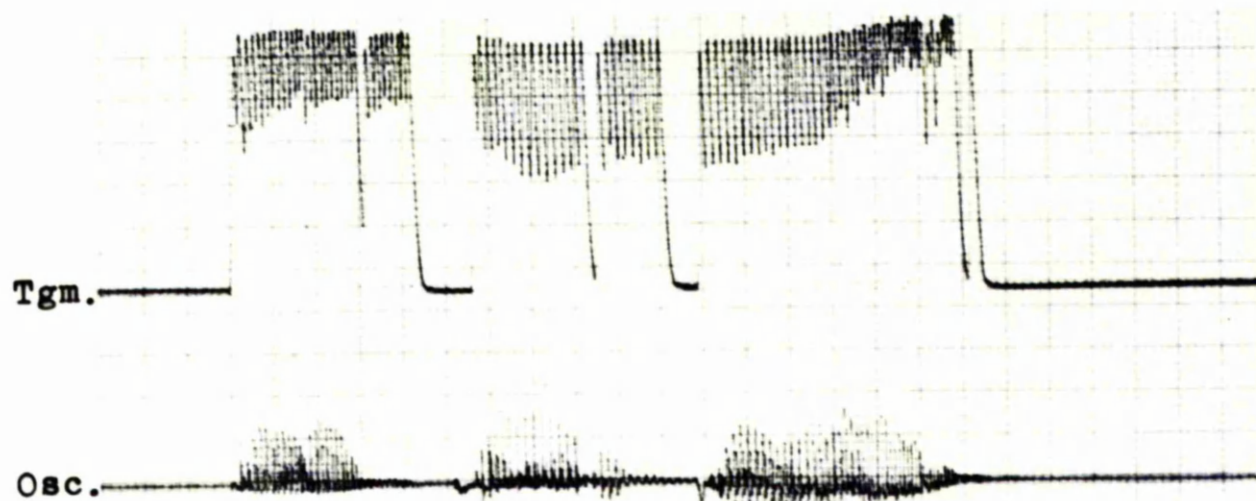


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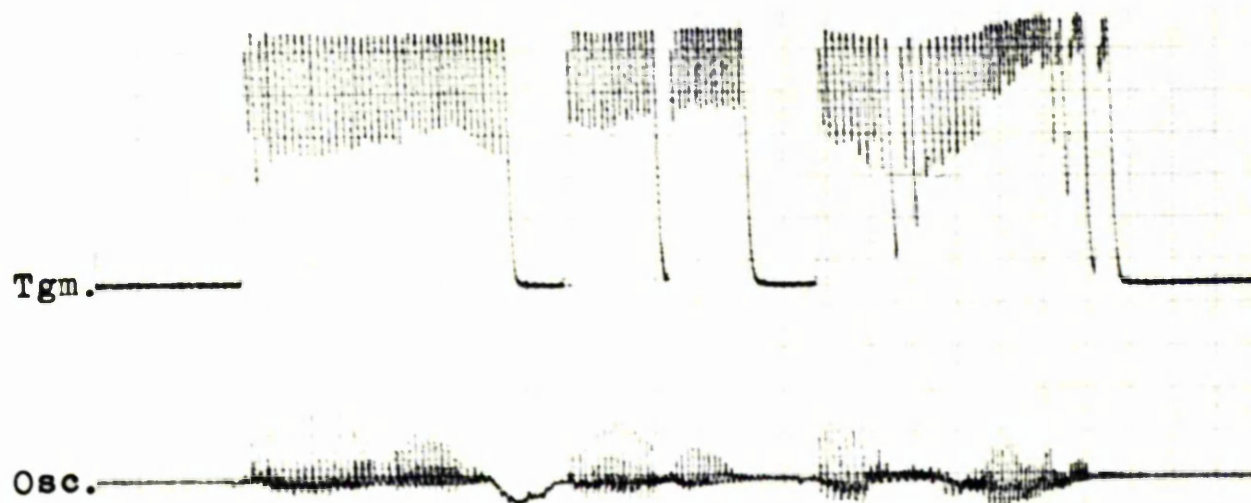




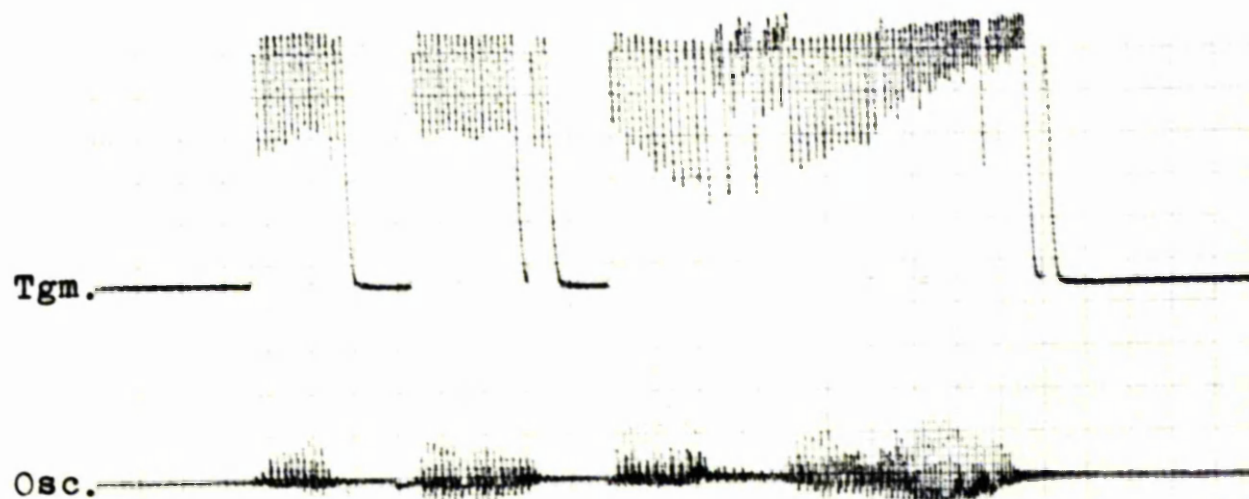




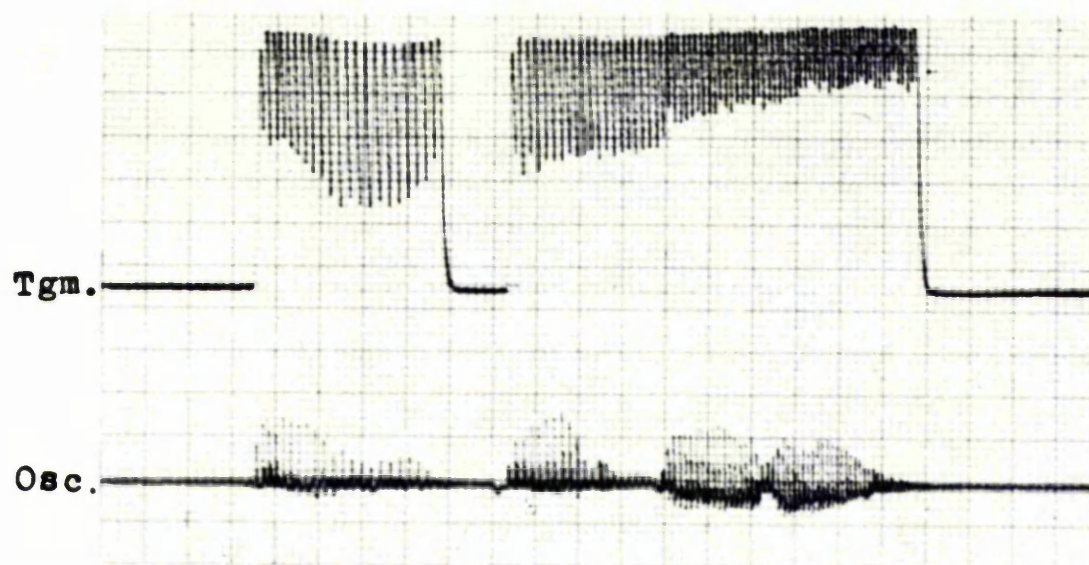
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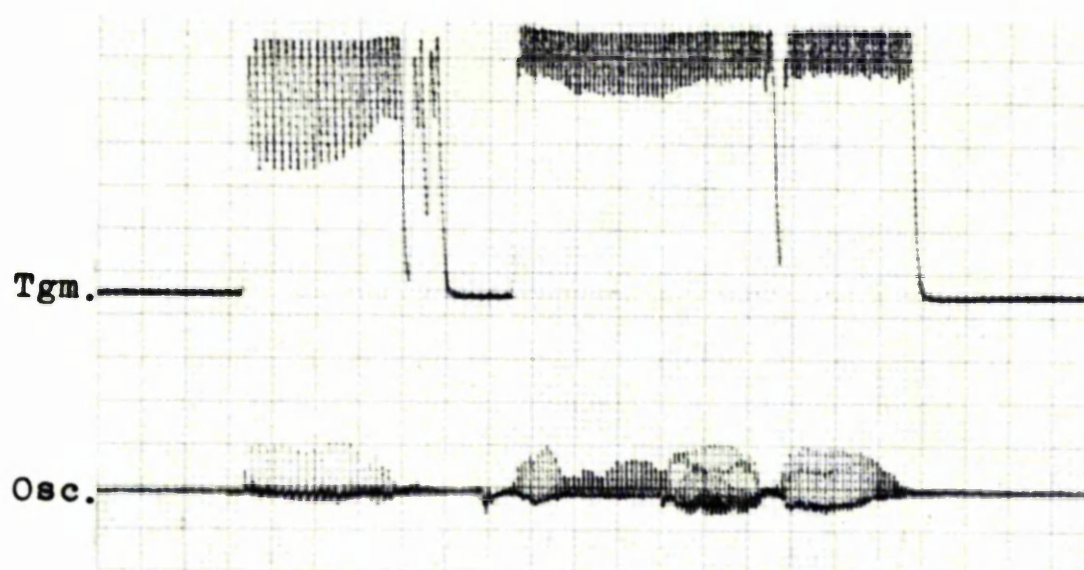
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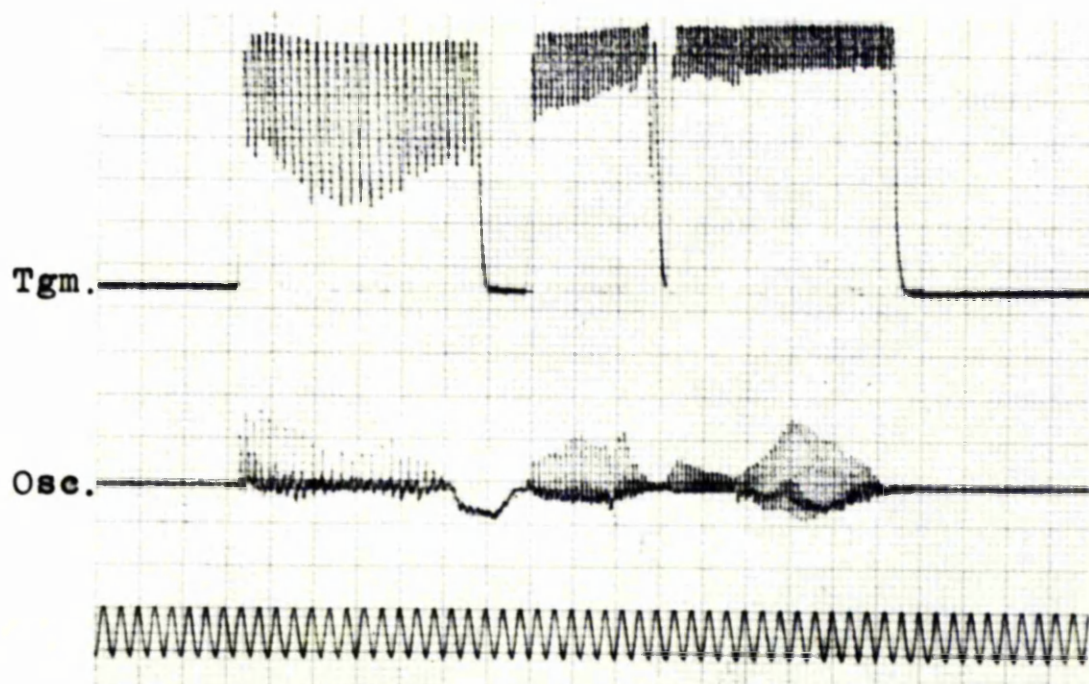
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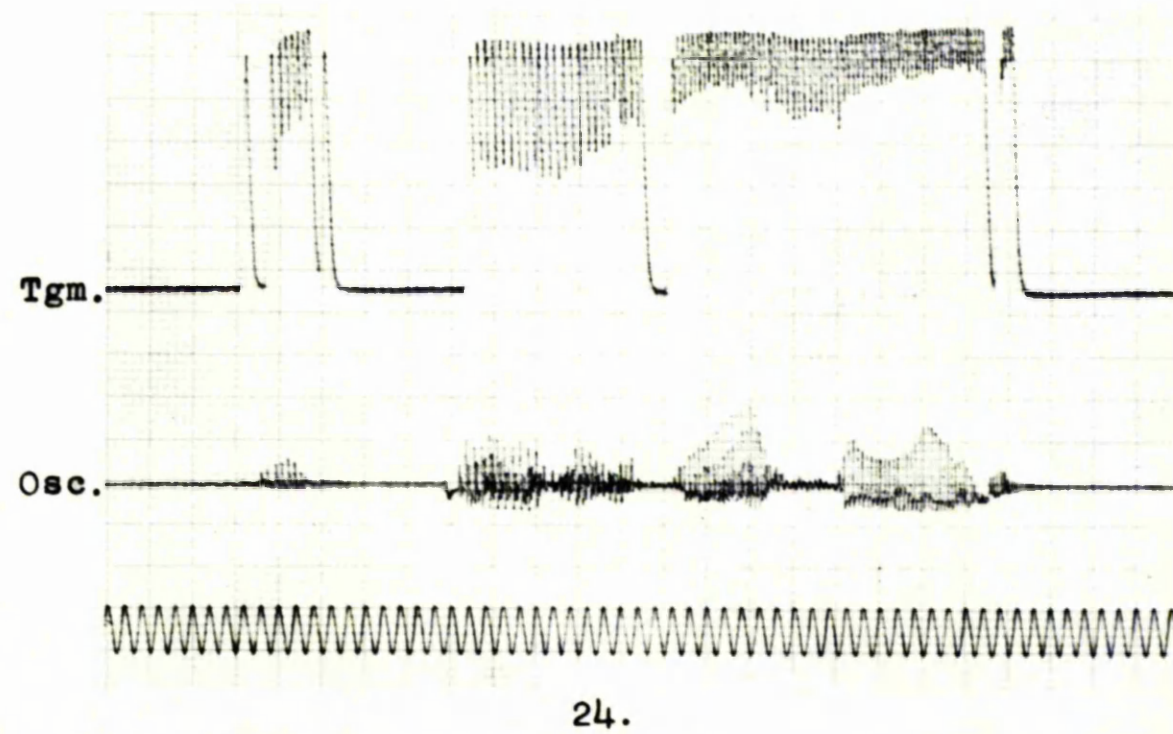
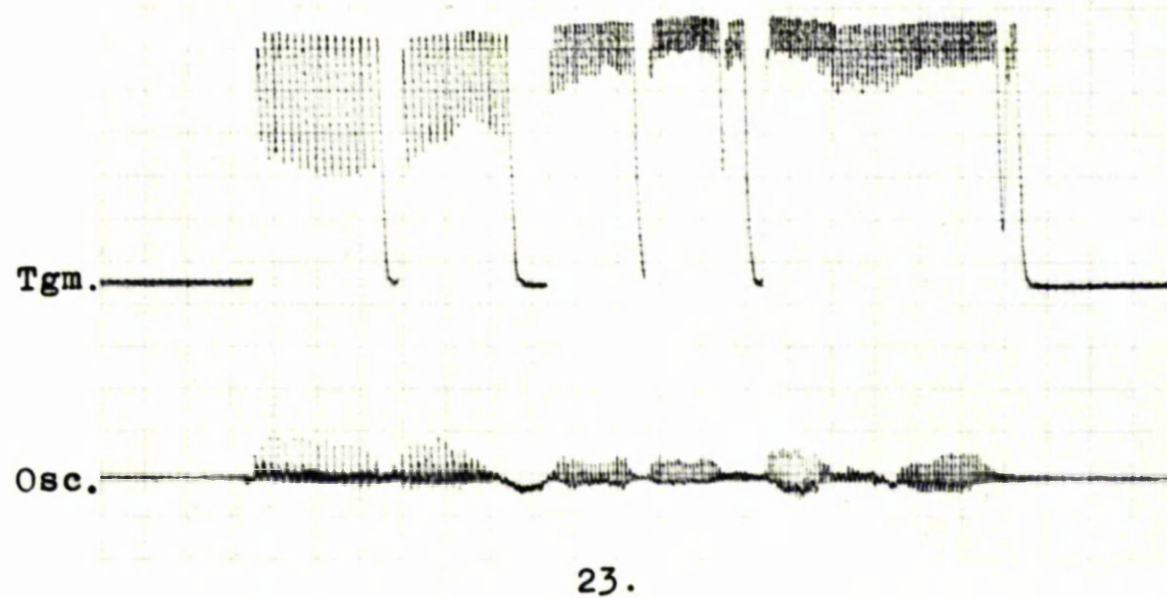
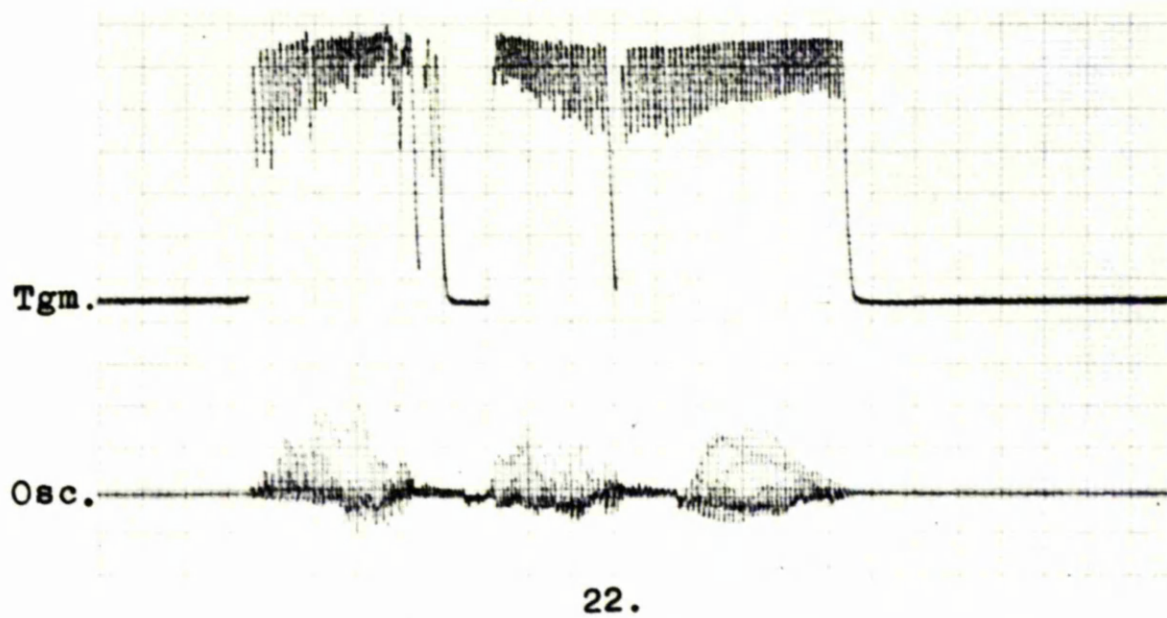
19.



20.



21.



Tgm.

Osc.

25.

Tgm.

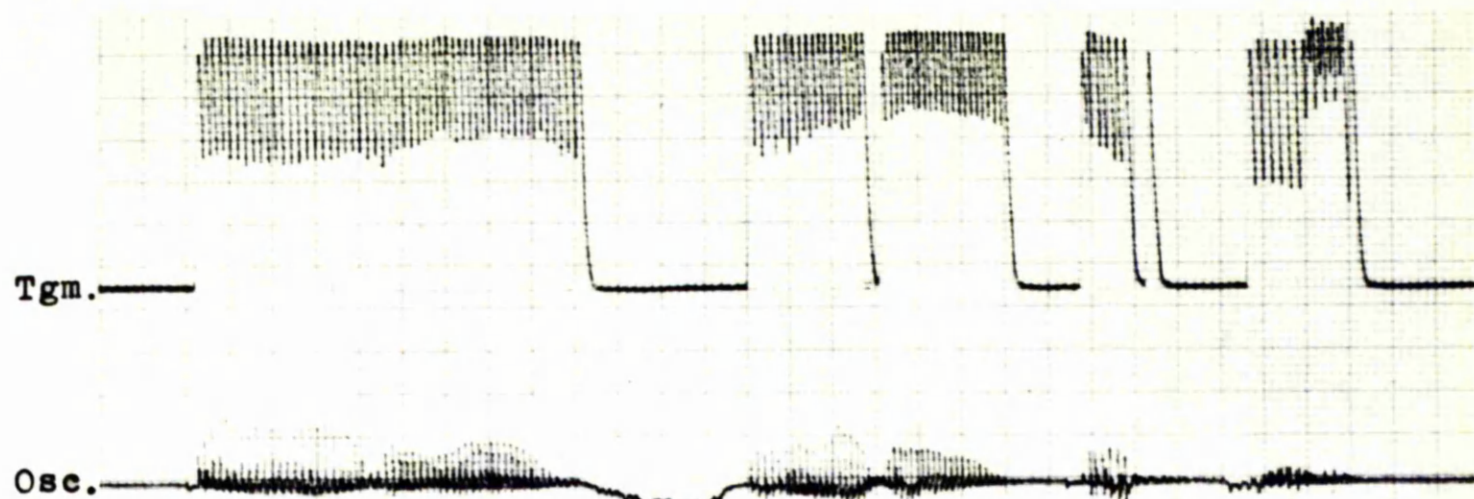
Osc.

26.

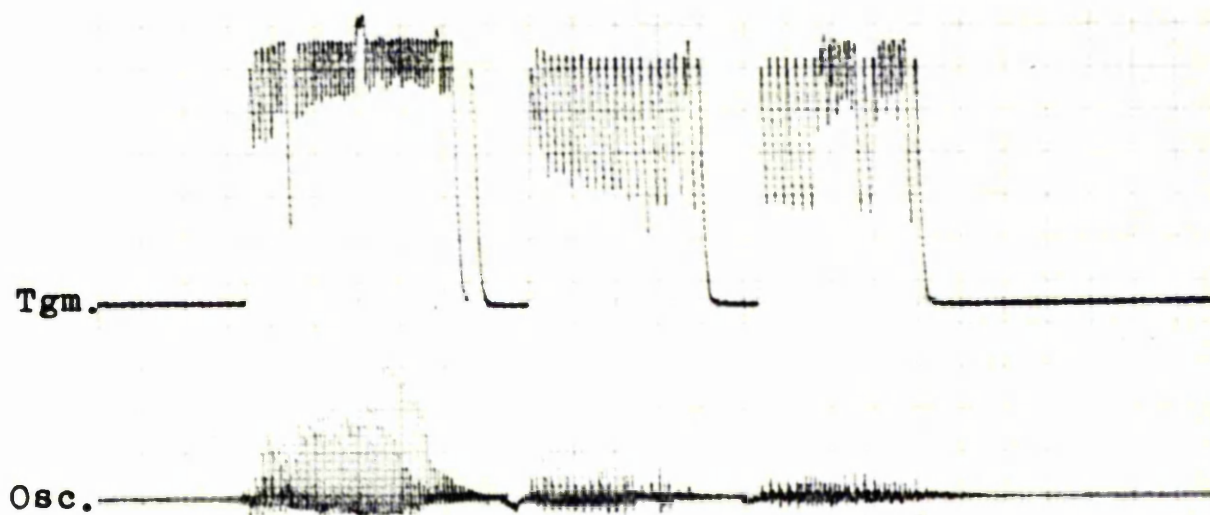
Tgm.

Osc.

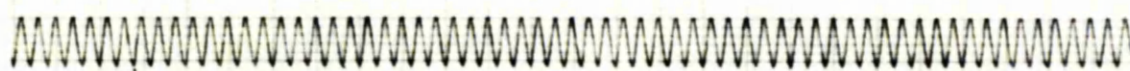
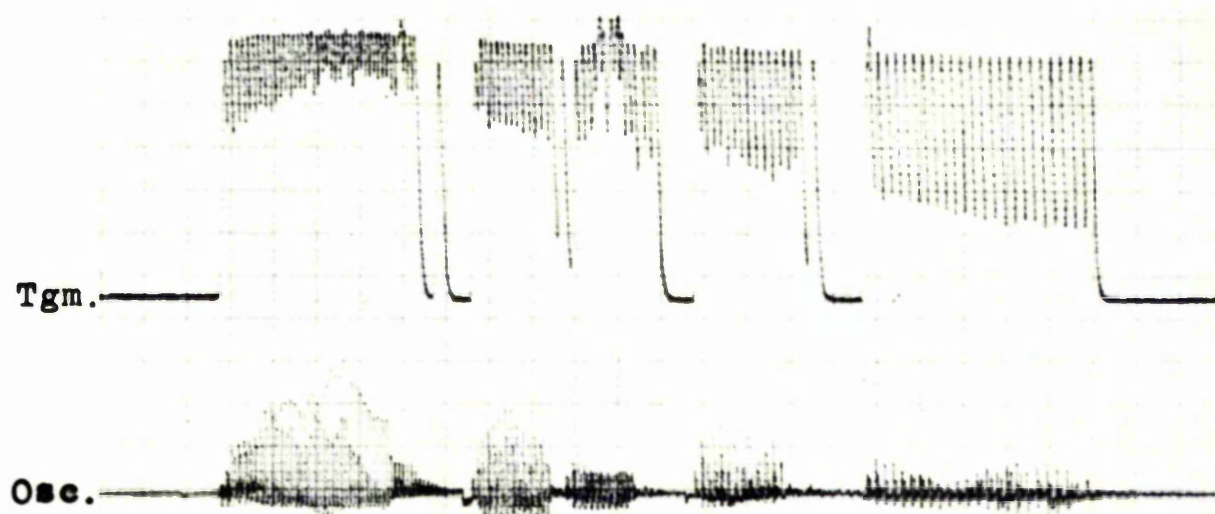
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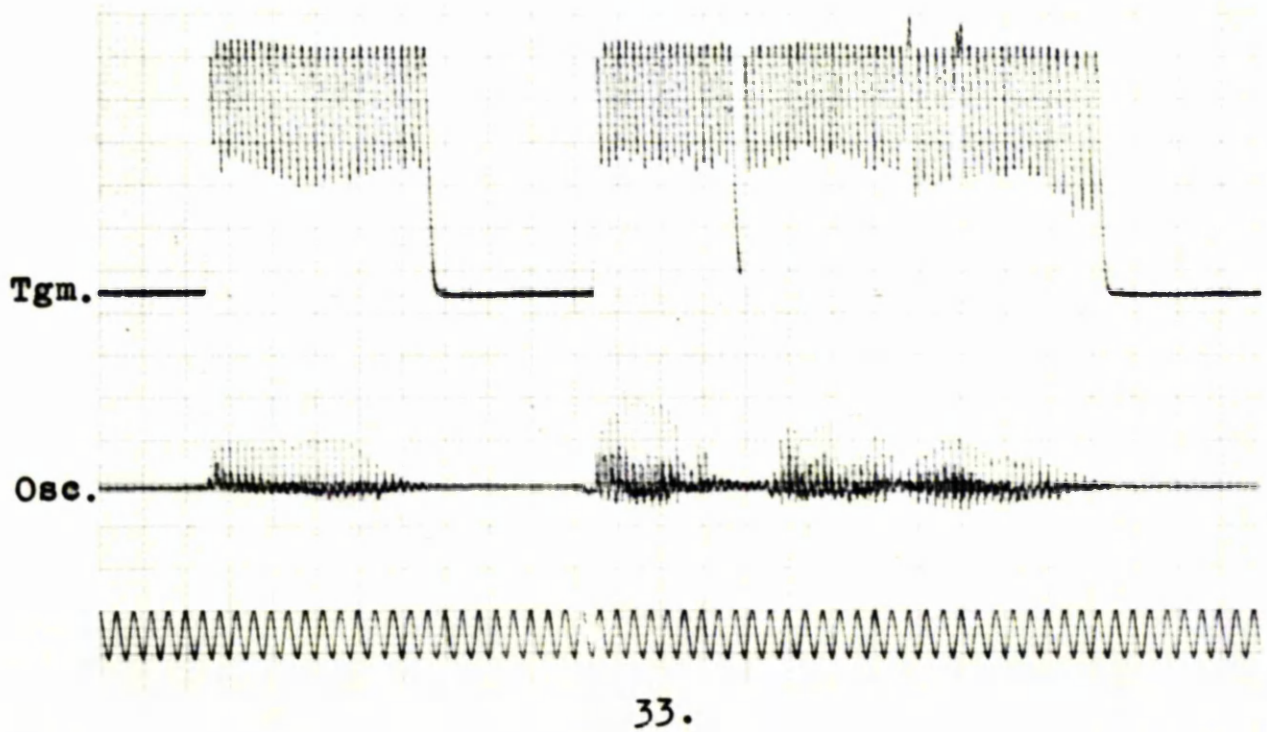
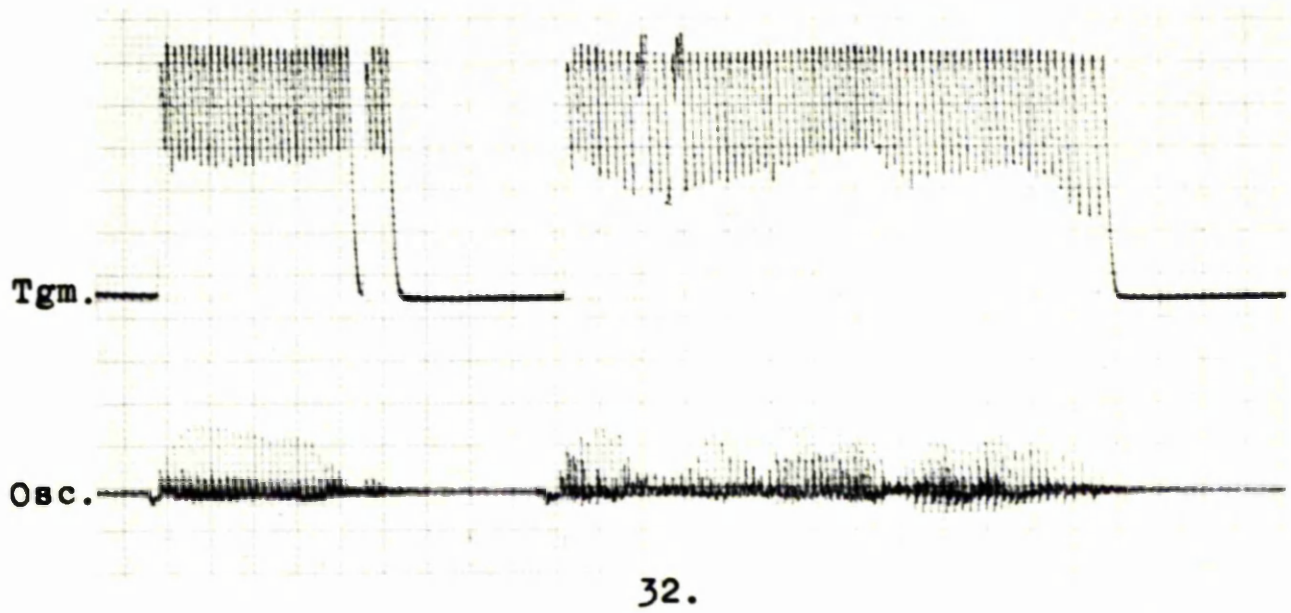
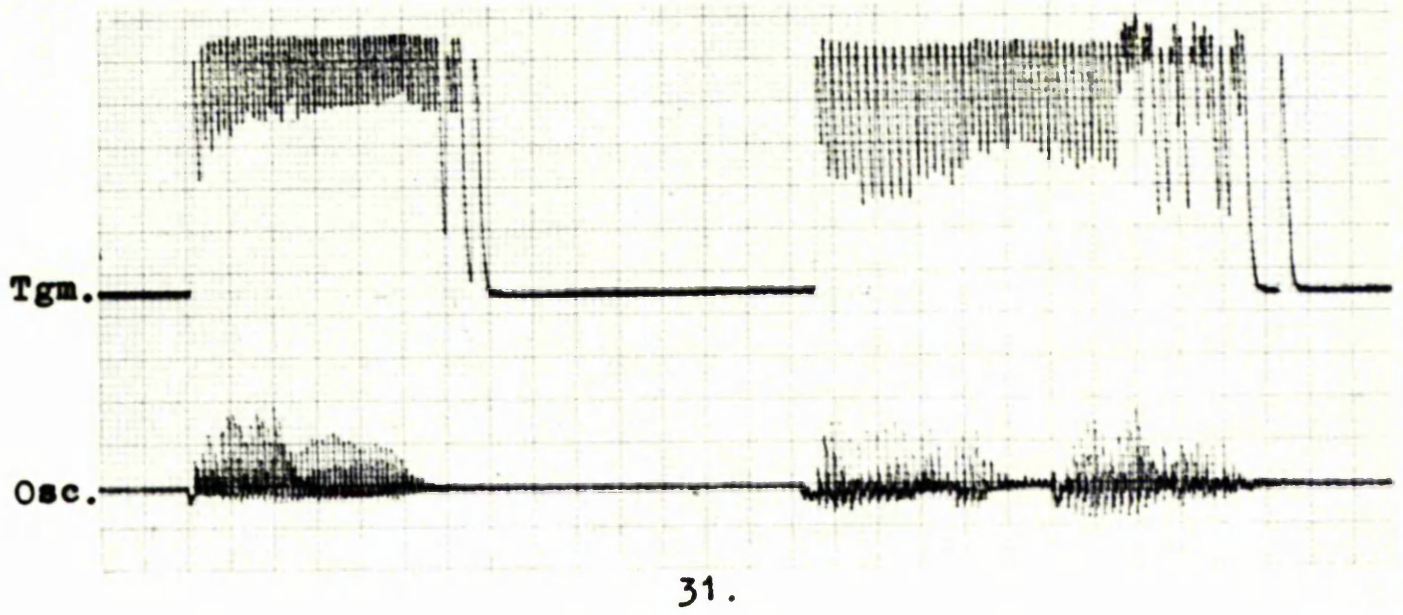
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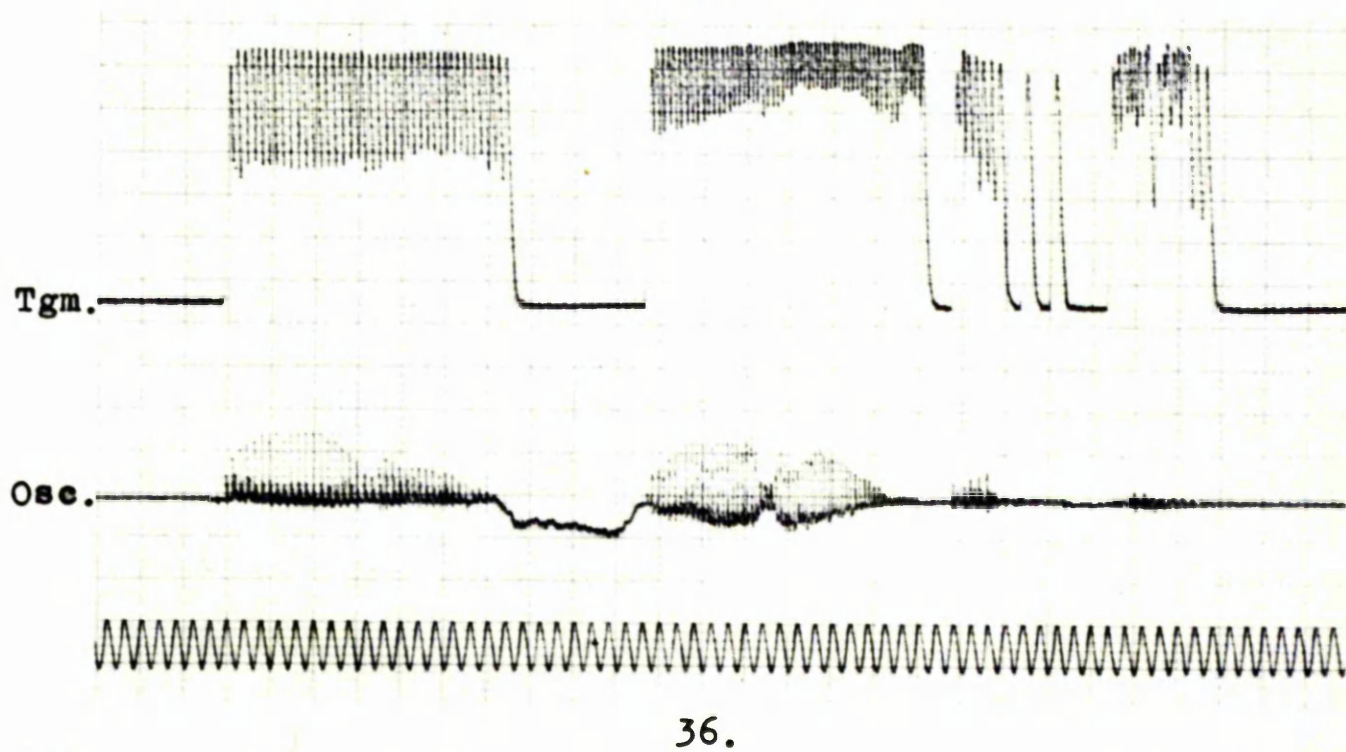
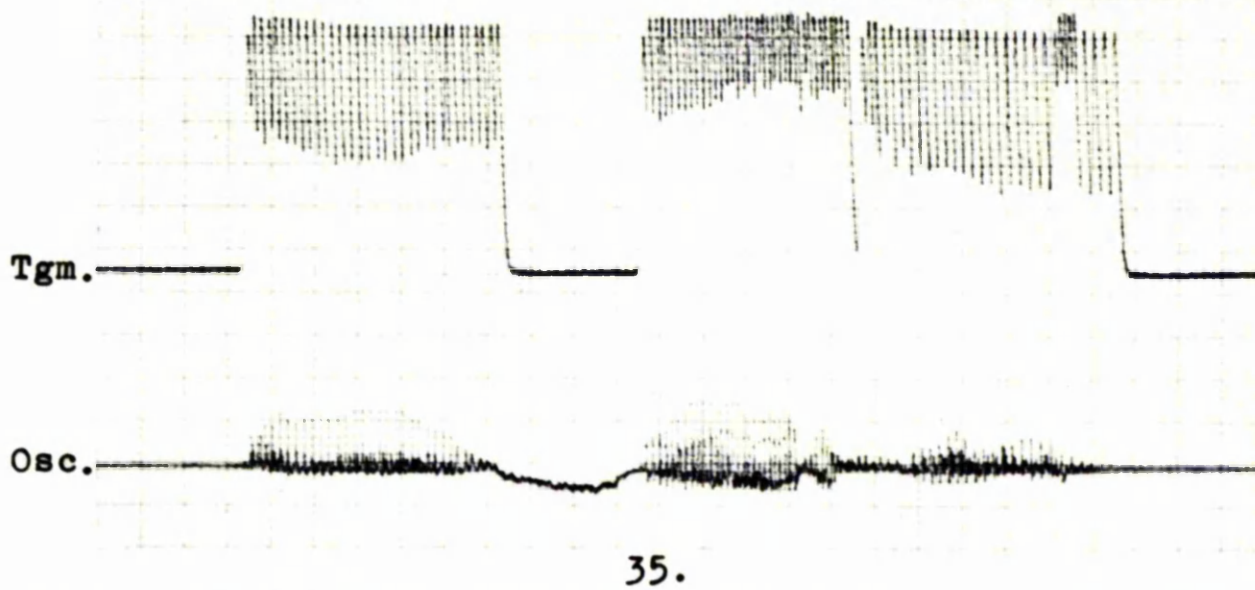
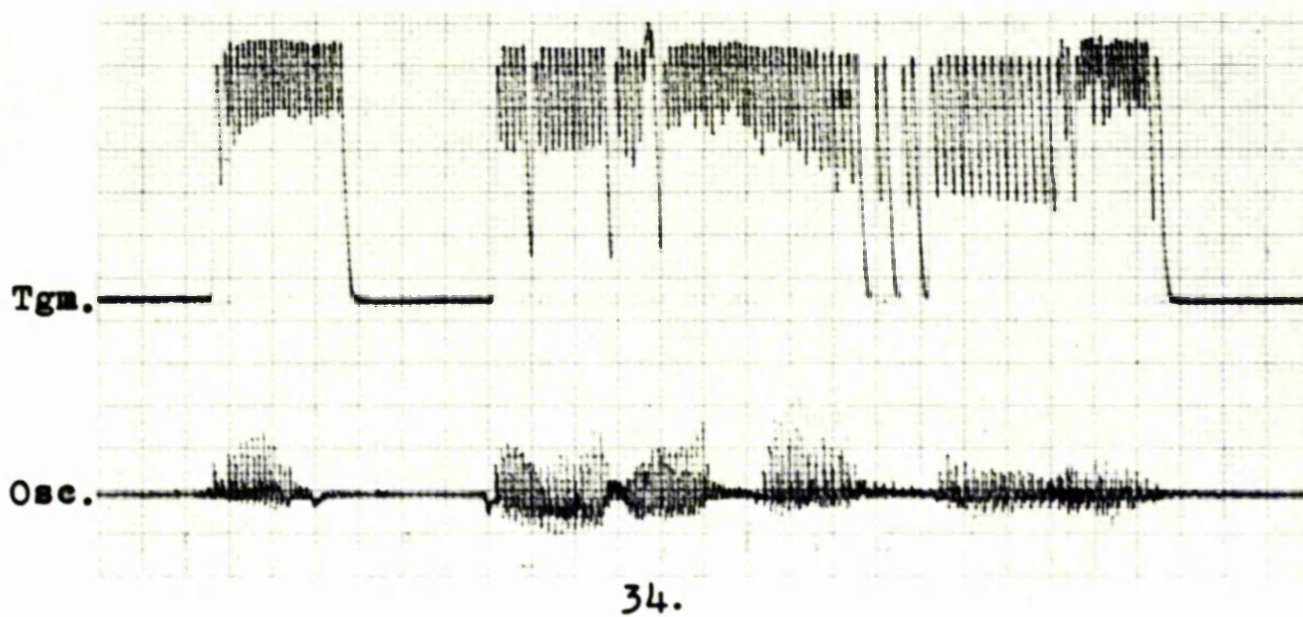


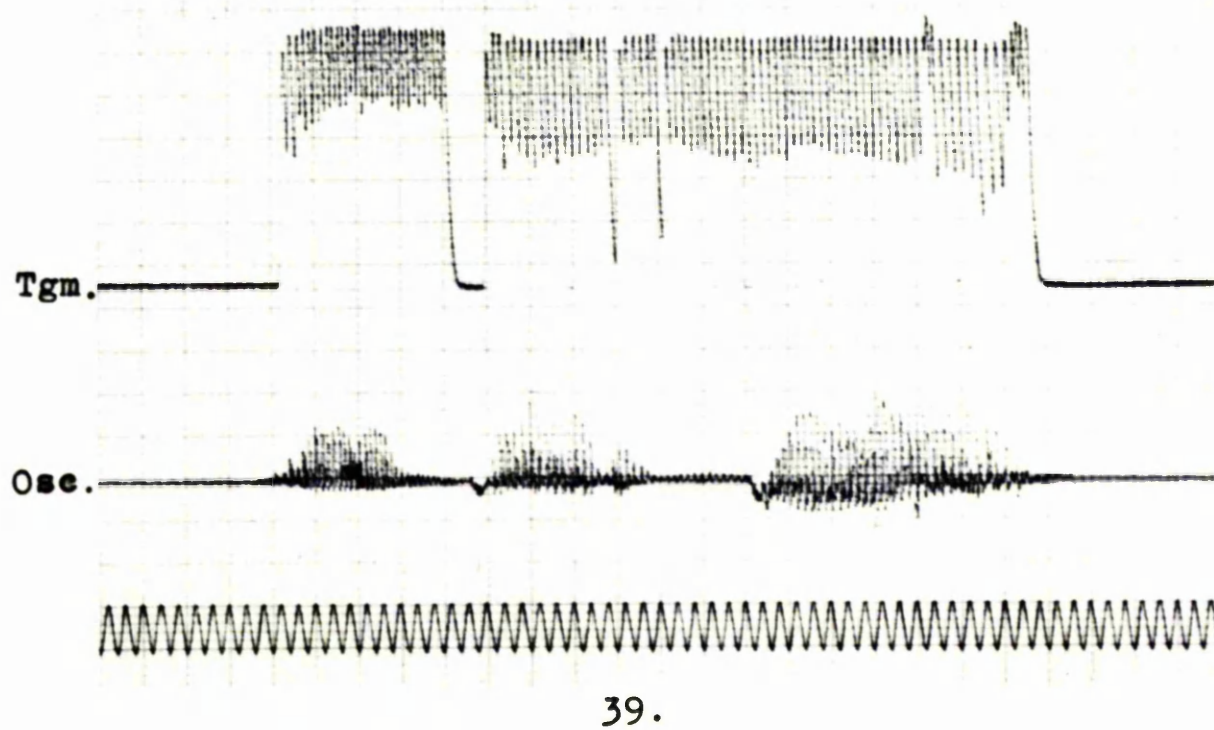
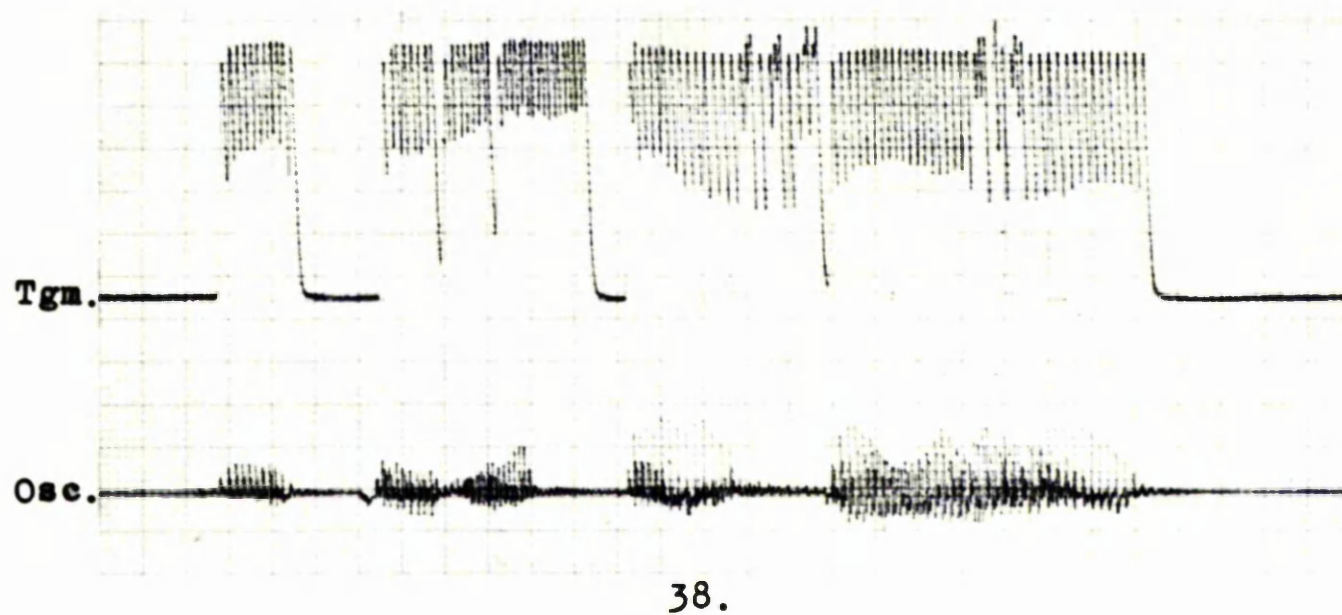
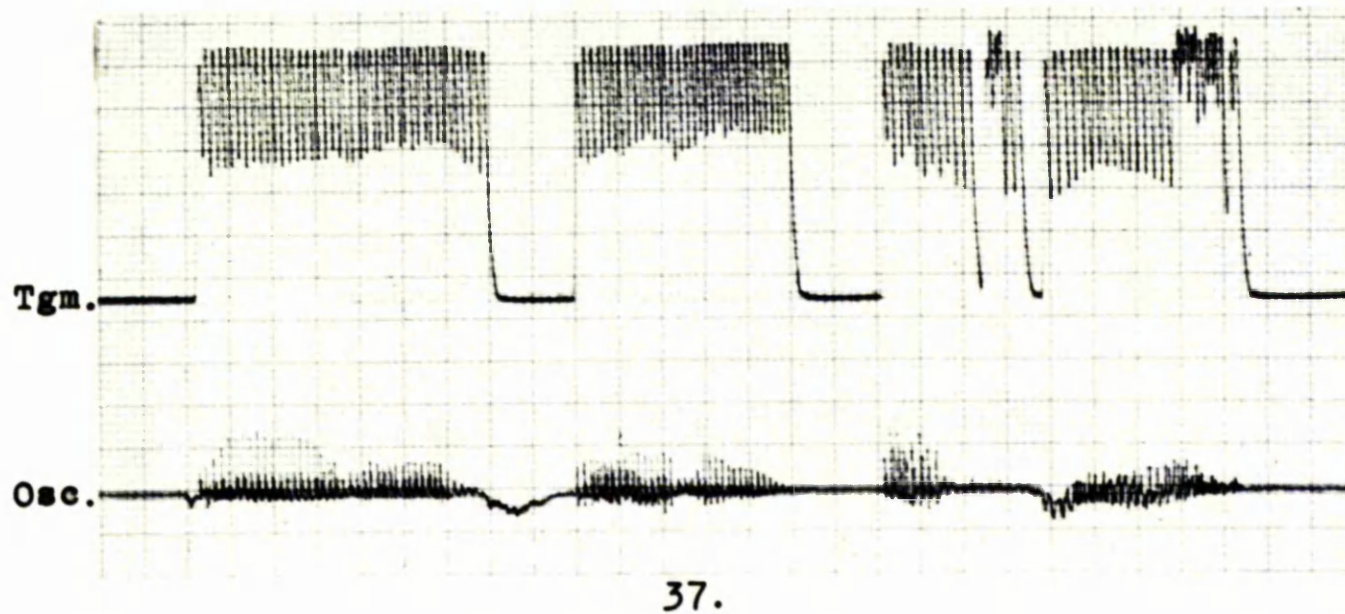
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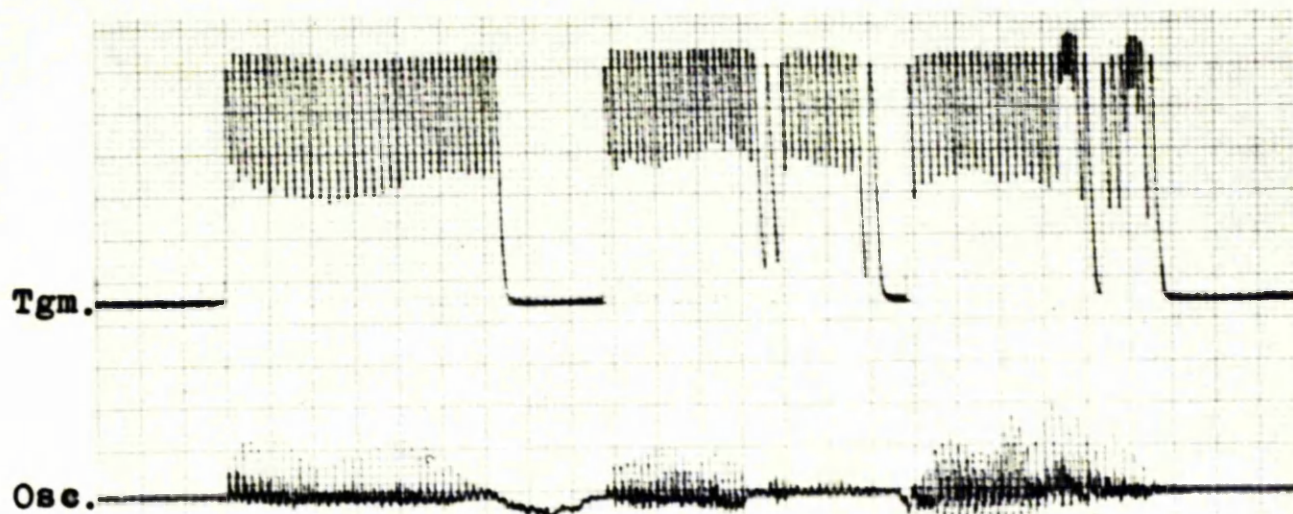


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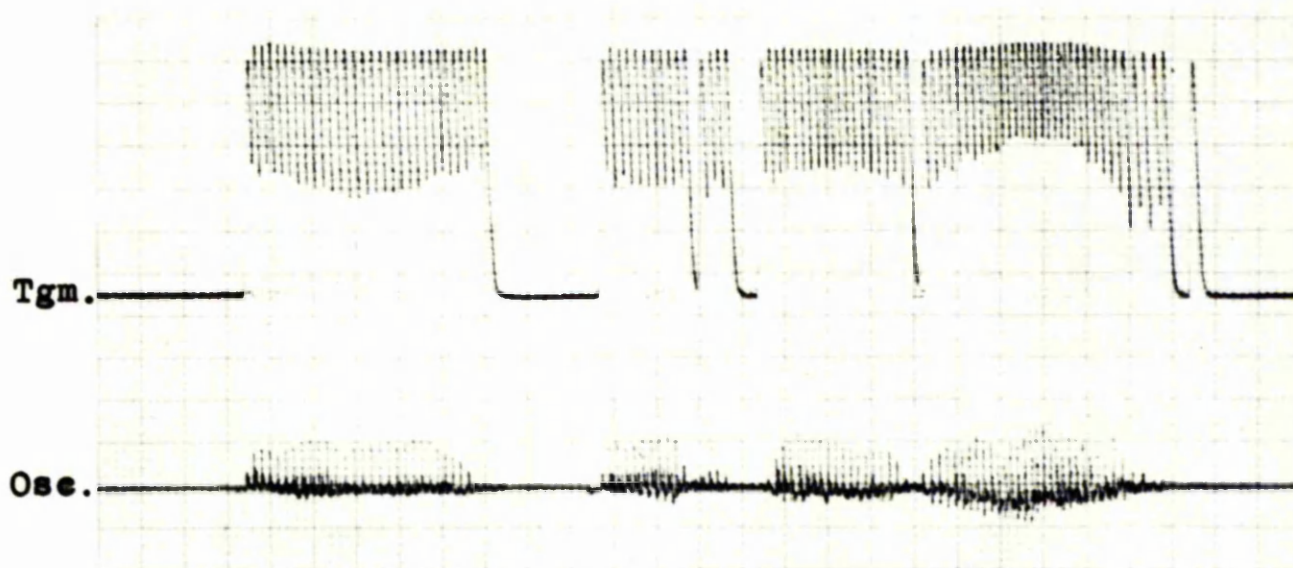




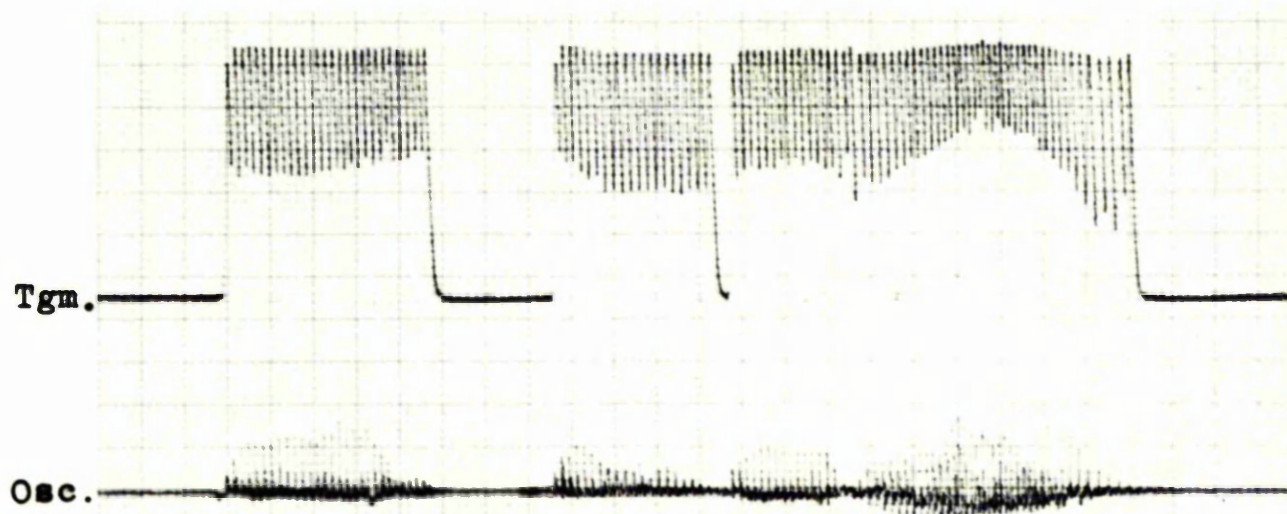




40.



41.



42.



List of Mingograms (Mgms):-

Non-emphatic:-

- | | | | |
|---|----|--------------------|-------|
| F | 1. | 'pa tərda rIa.' | 1-2-3 |
| | 2. | 'pa šer gIa.' | 1-3-2 |
| | 3. | 'tar kUmda rIa.' | 2-1-3 |
| | 4. | 'taro šerō pəjji.' | 2-3-1 |
| | 5. | 'O kər gIa.' | 3-1-2 |
| | 6. | 'O teri pabia.' | 3-2-1 |

Emphatic sentences:-

F Sentence-initial word emphatic:-

- | | | |
|--|-----|----------------------------|
| | 7. | ' <u>pa</u> tərda rIa.' |
| | 8. | ' <u>pa</u> šer gIa.' |
| | 9. | ' <u>tar</u> kUmda rIa.' |
| | 10. | ' <u>taro</u> šerō pəjji.' |
| | 11. | ' <u>O</u> kər gIa.' |
| | 12. | ' <u>O</u> teri pabia.' |

Penultimate word in the sentence emphasized:-

- | | | |
|--|-----|---------------------------|
| | 13. | 'O <u>kər</u> gIa.' |
| | 14. | 'tar <u>kUmda</u> rIa.' |
| | 15. | 'pa <u>tərda</u> rIa.' |
| | 16. | 'O <u>teri</u> pabia.' |
| | 17. | 'pa. <u>šer</u> gIa.' |
| | 18. | 'taro <u>šerō</u> pəjji.' |

Sentence-final word emphatic:-

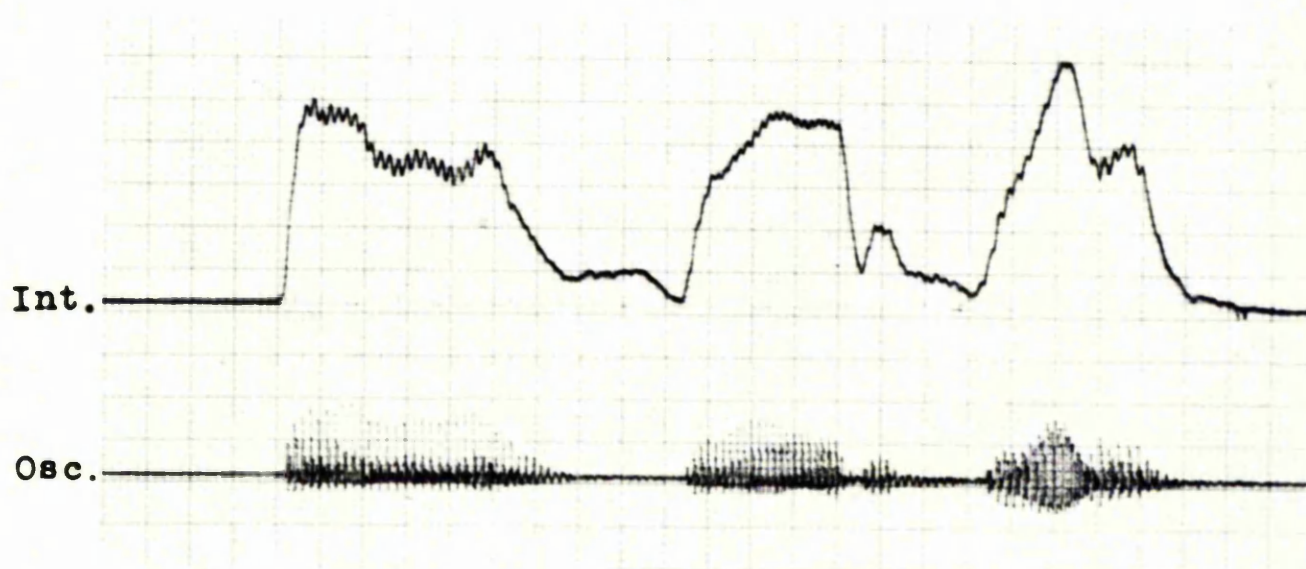
- | | | |
|--|-----|----------------------------|
| | 19. | 'taro šerō <u>pəjji</u> .' |
|--|-----|----------------------------|

20. 'O teri pabia!
21. 'O kər gIa.'
22. 'pa šər gIa.'
23. 'pa tərda rIa.'
24. 'tar kUmda rIa.'

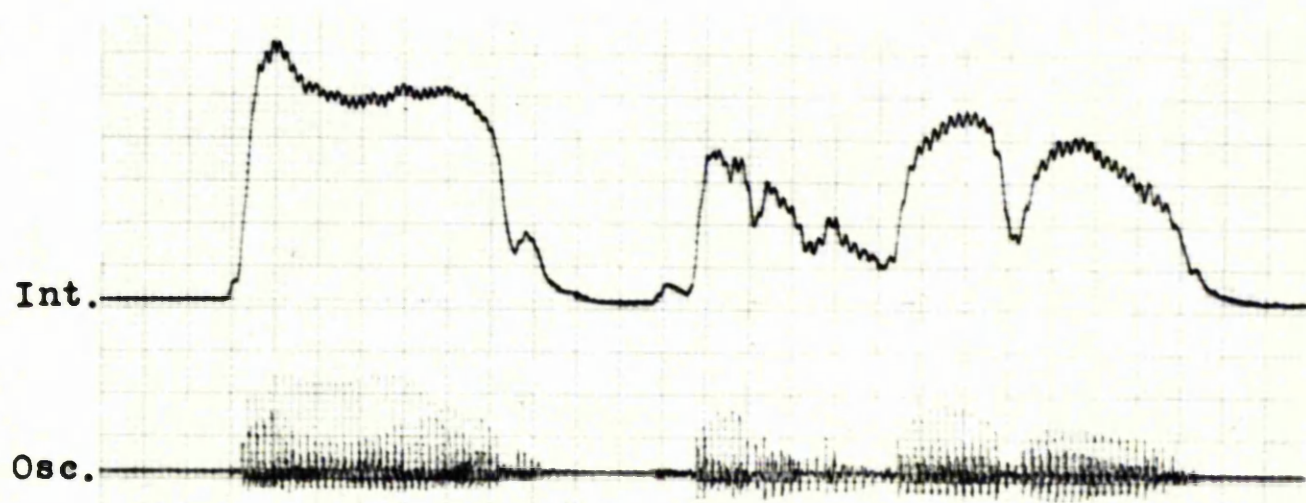
N.B. The time marker scale at the bottom of each page to follow represents 50 Hz ~~per second~~.



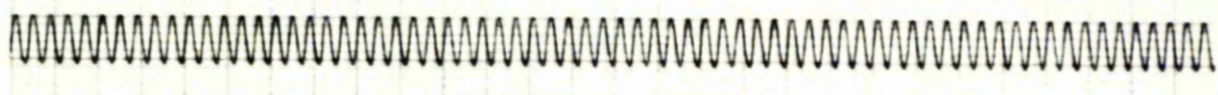
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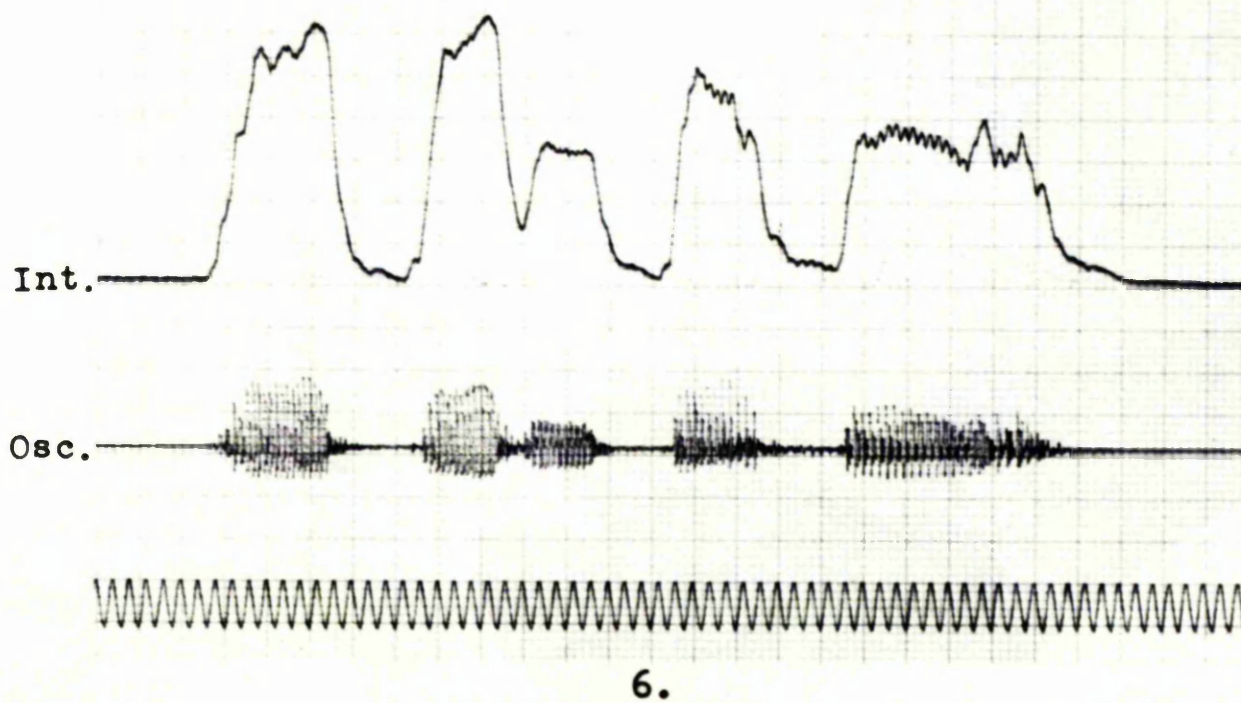
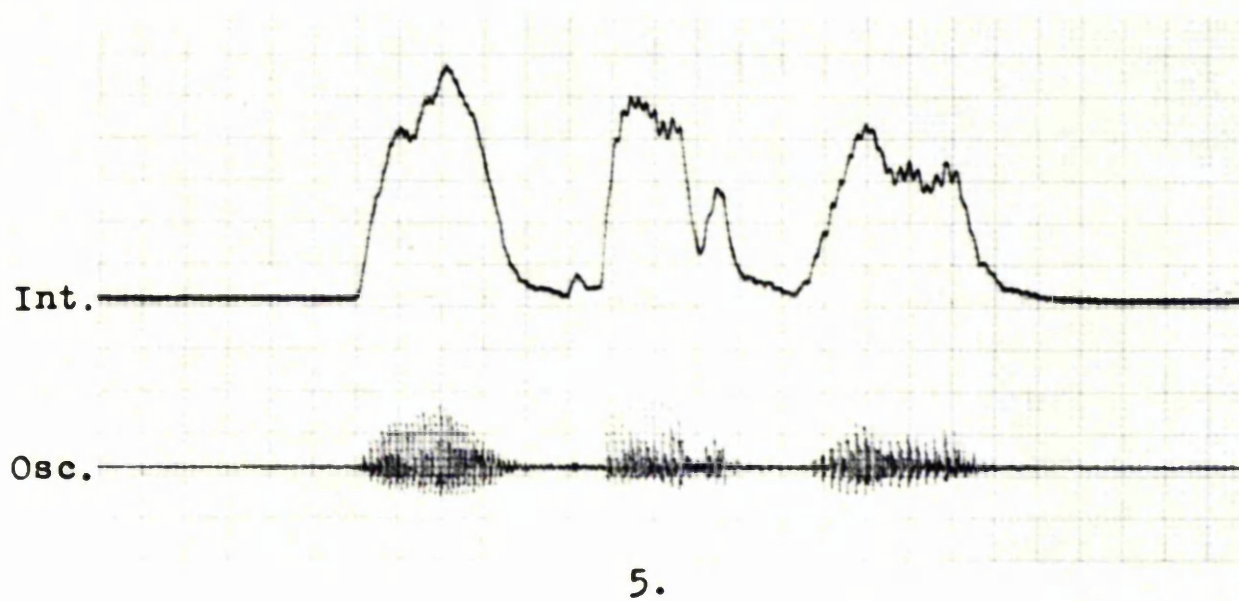
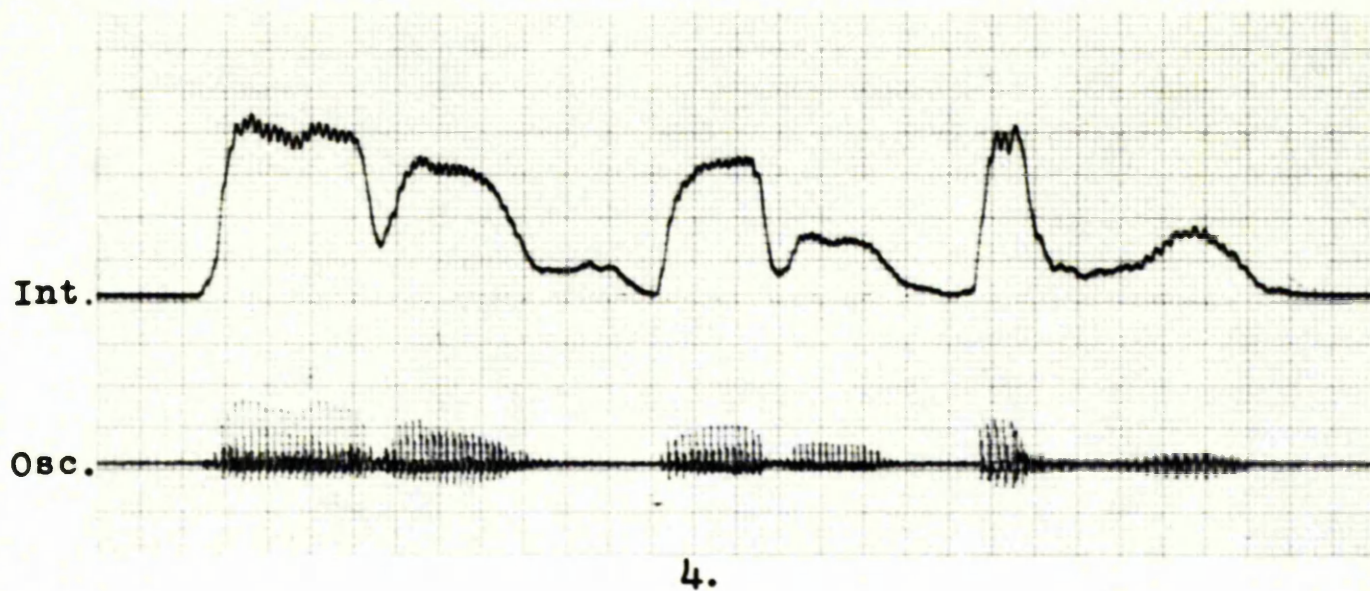


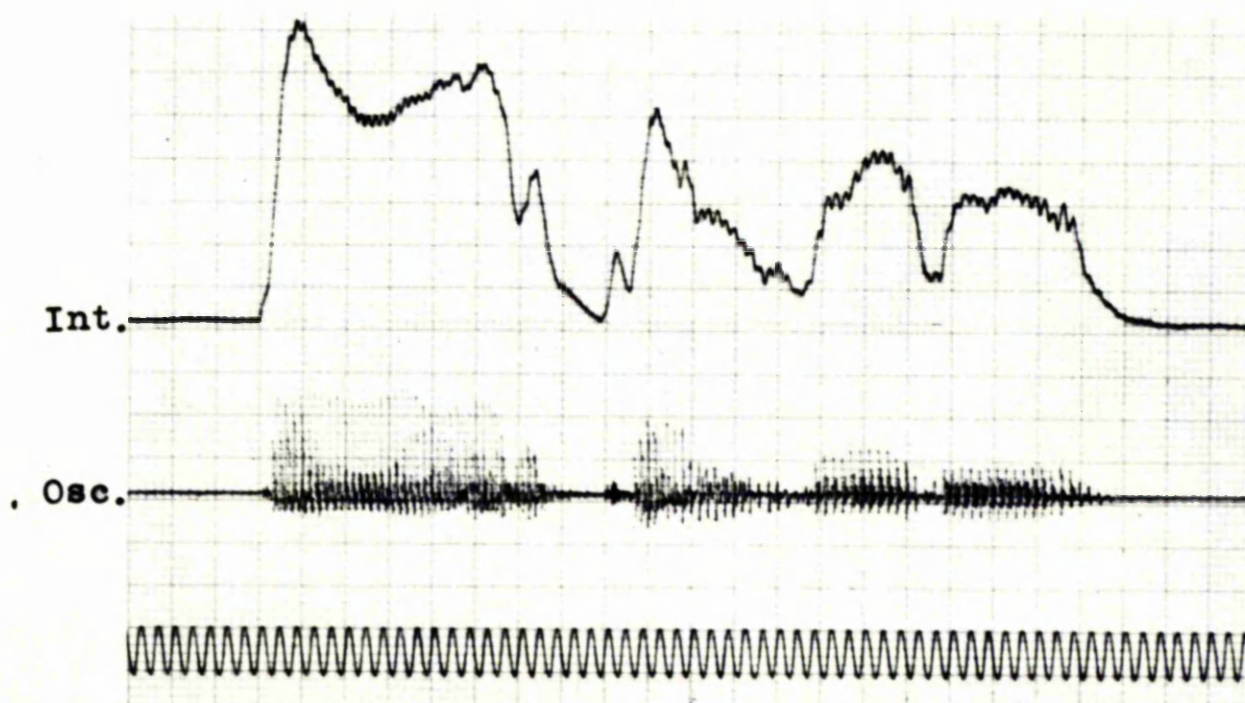
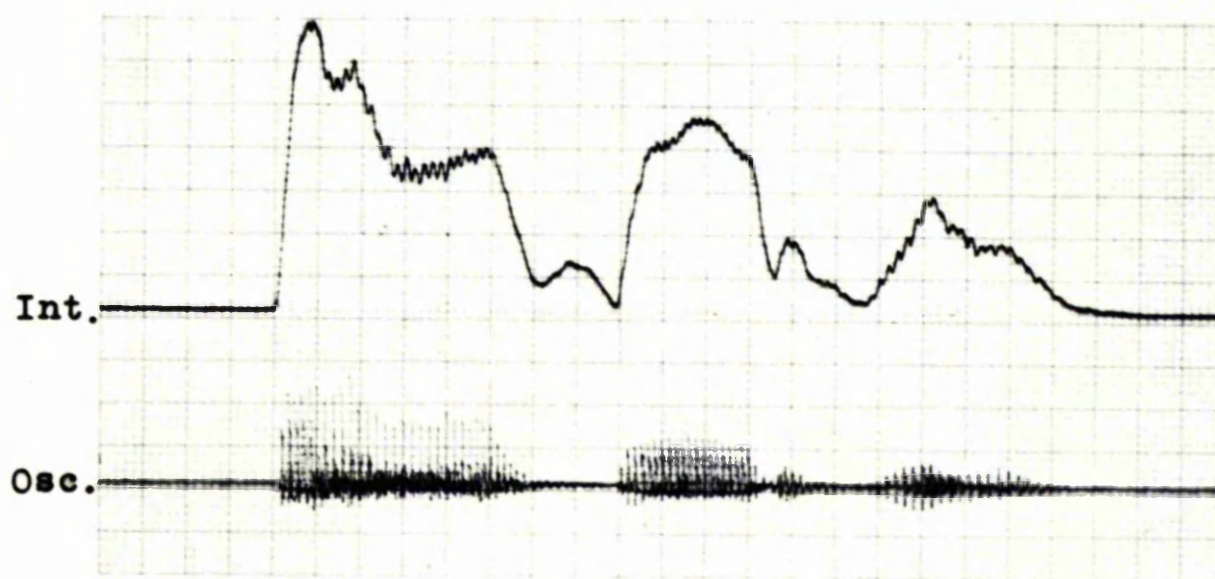
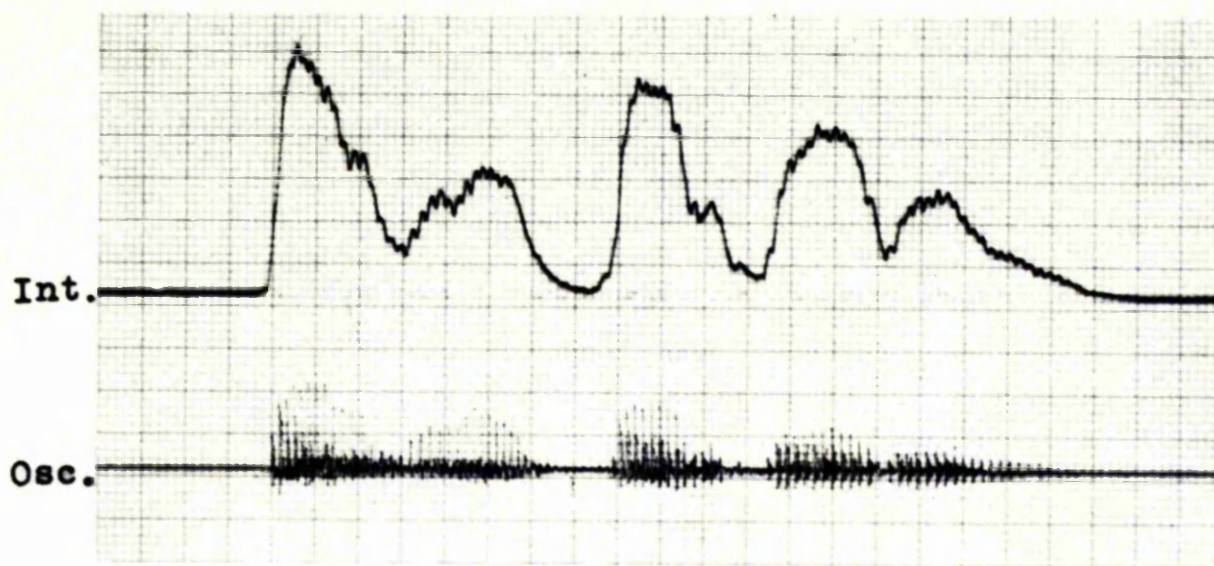
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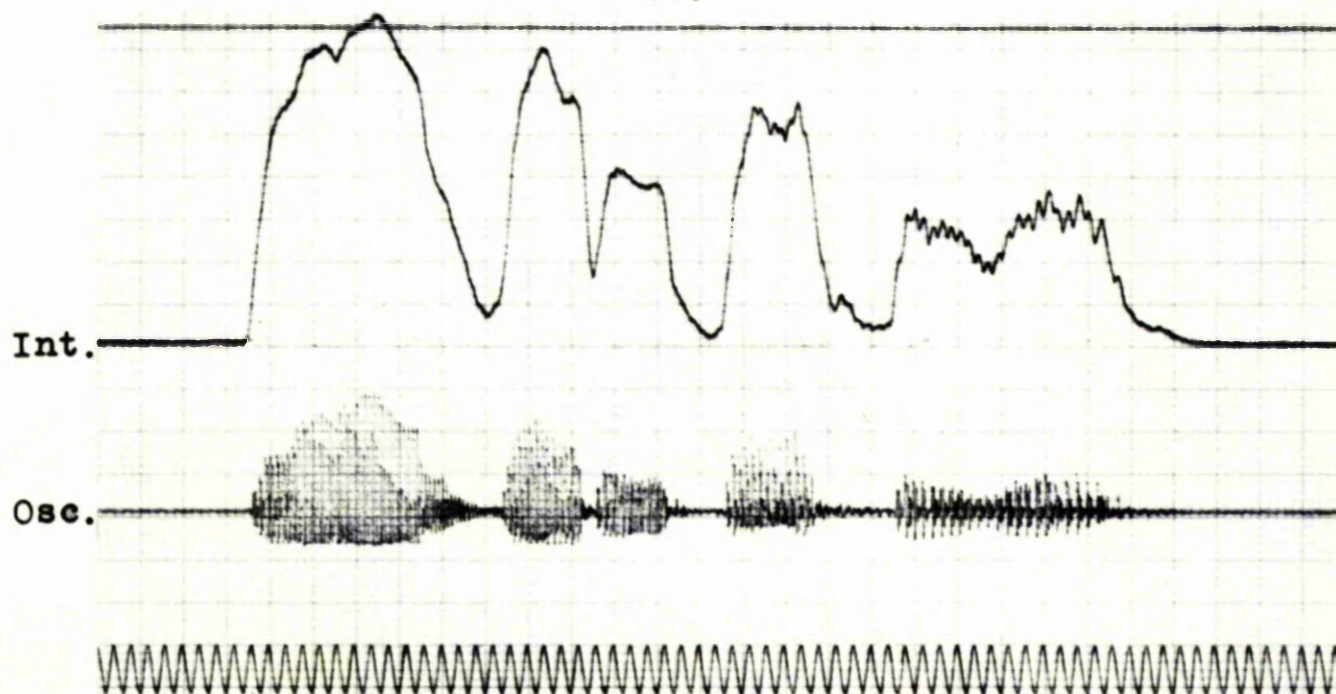
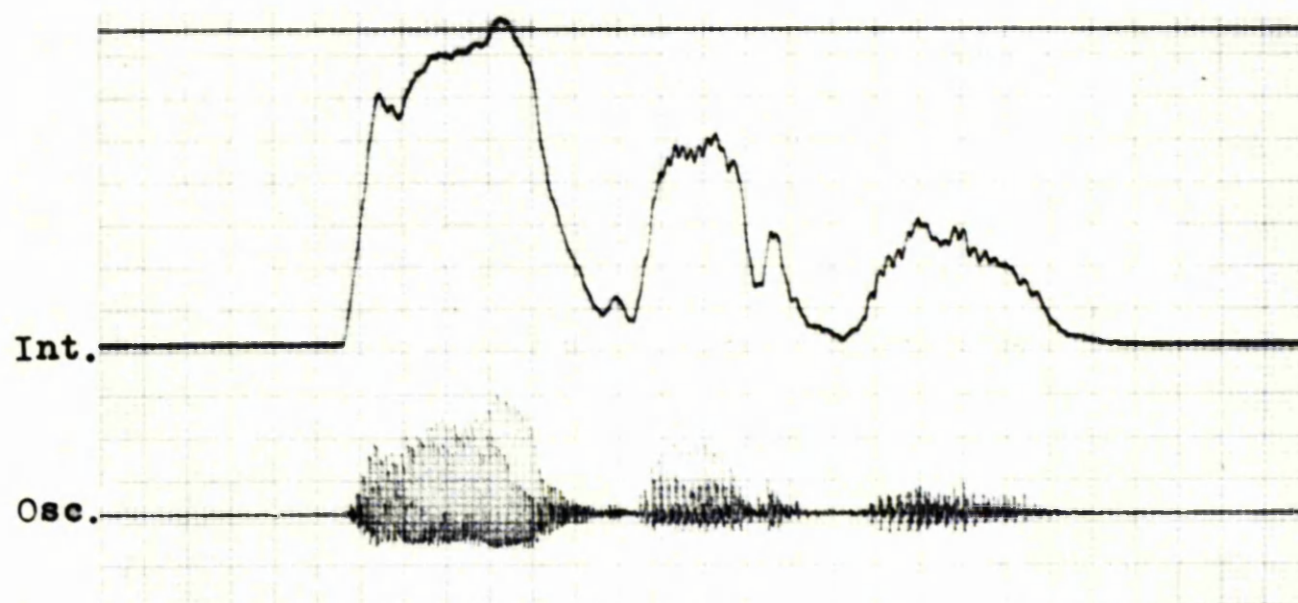
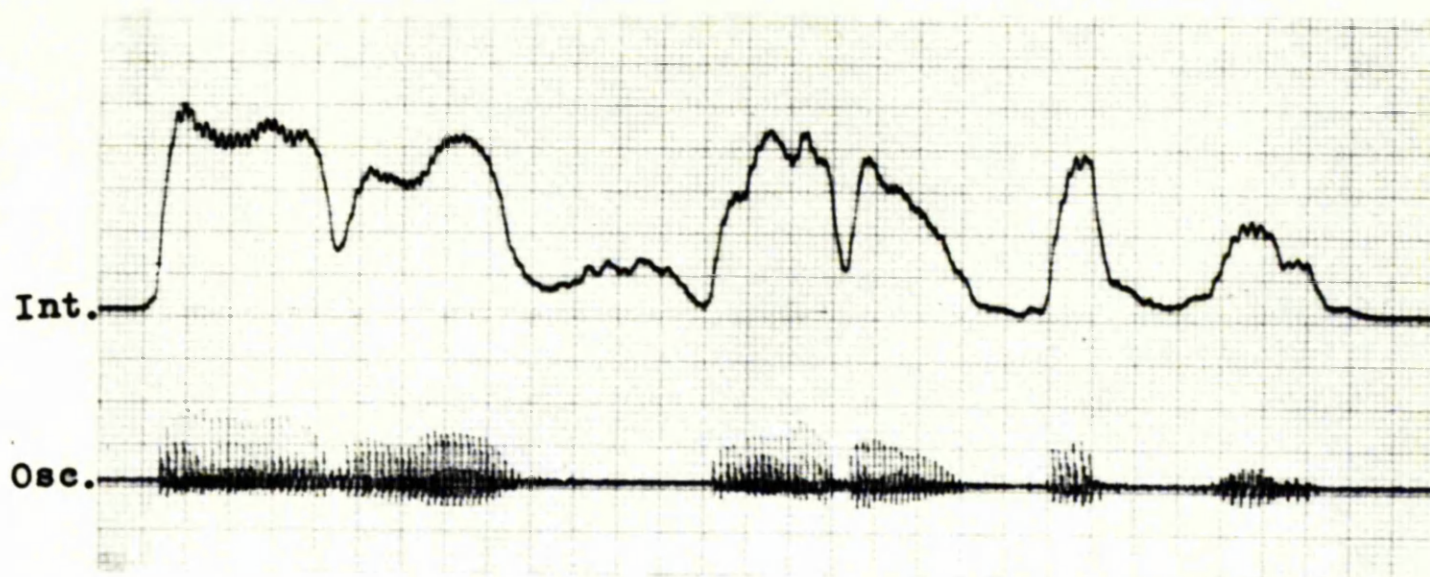


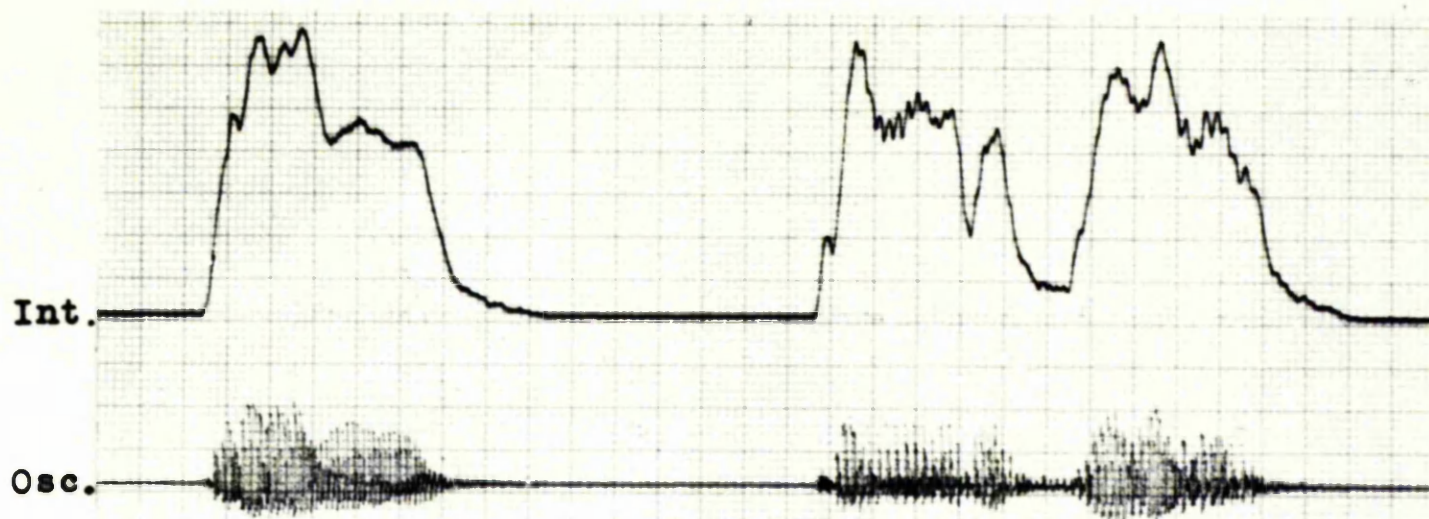
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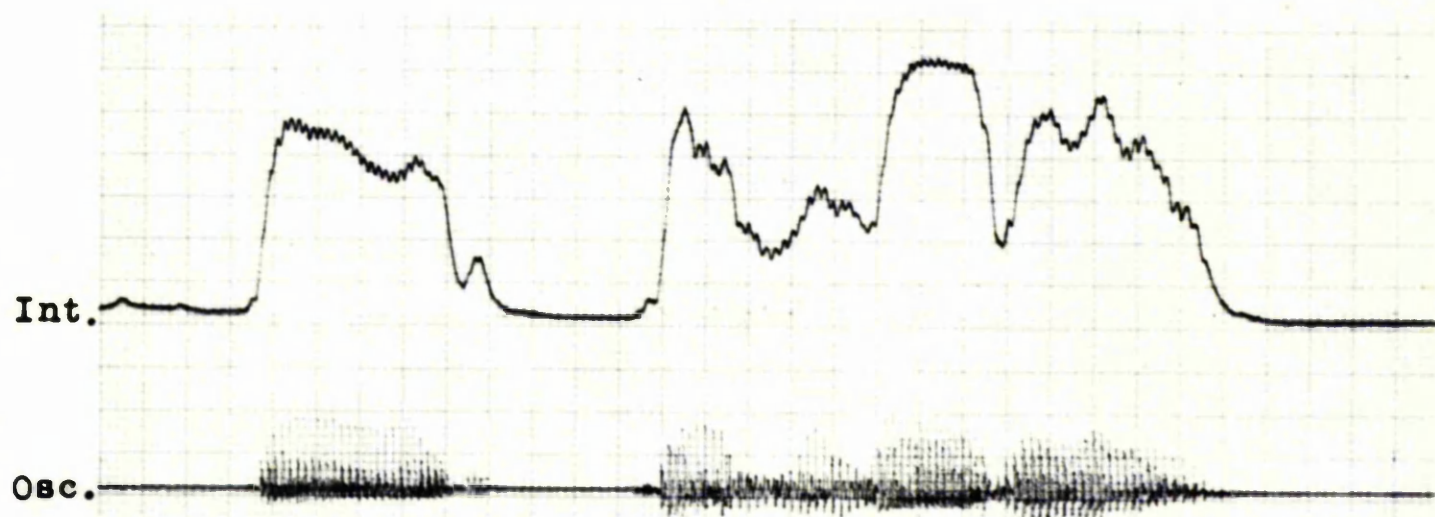








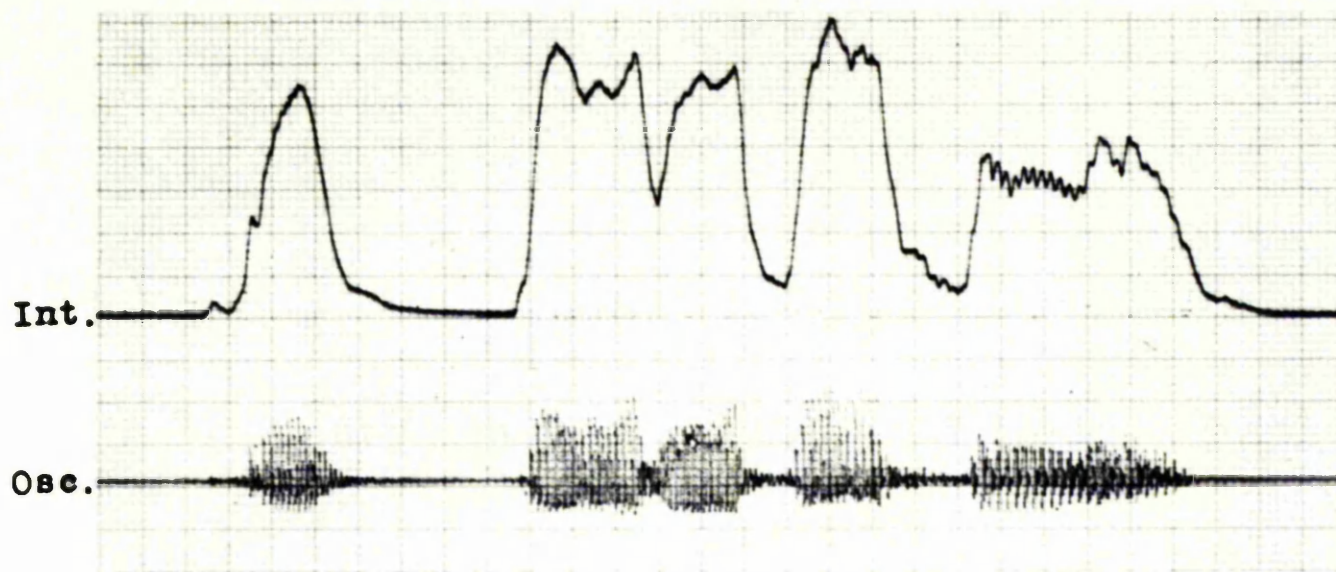
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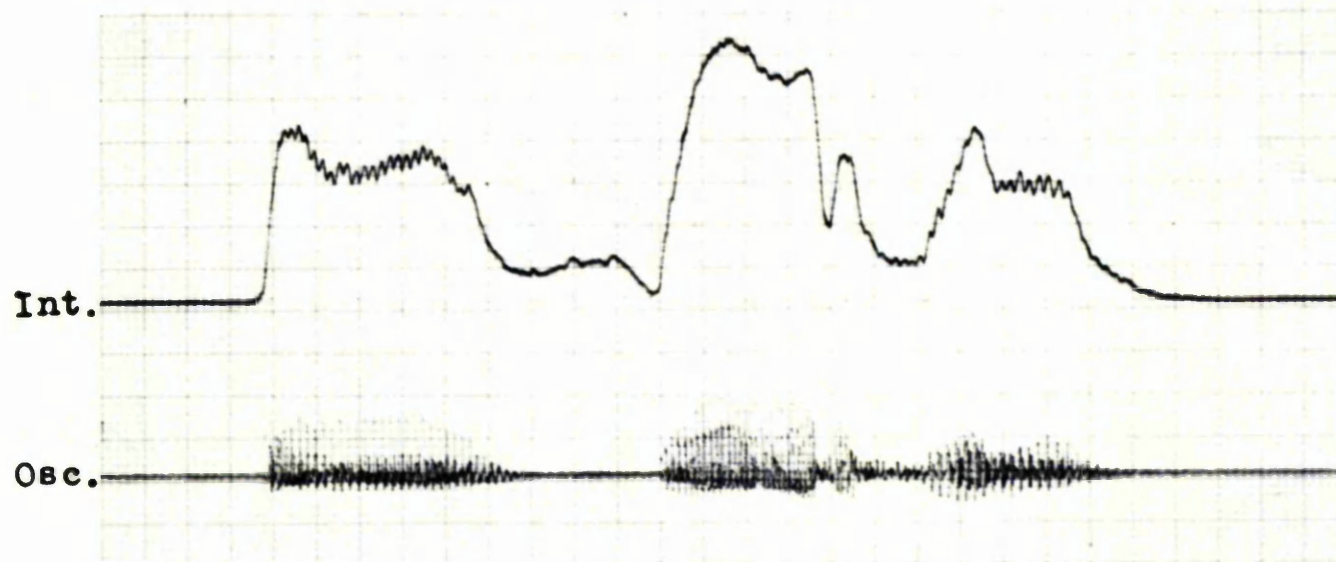
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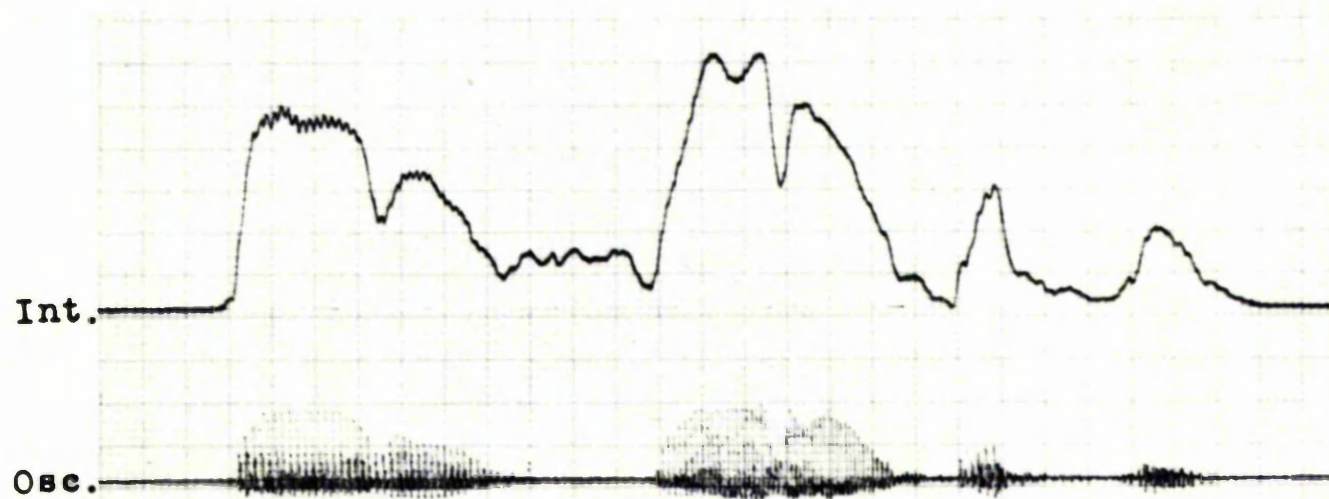
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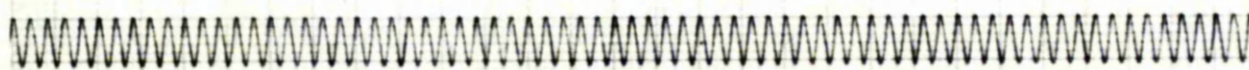
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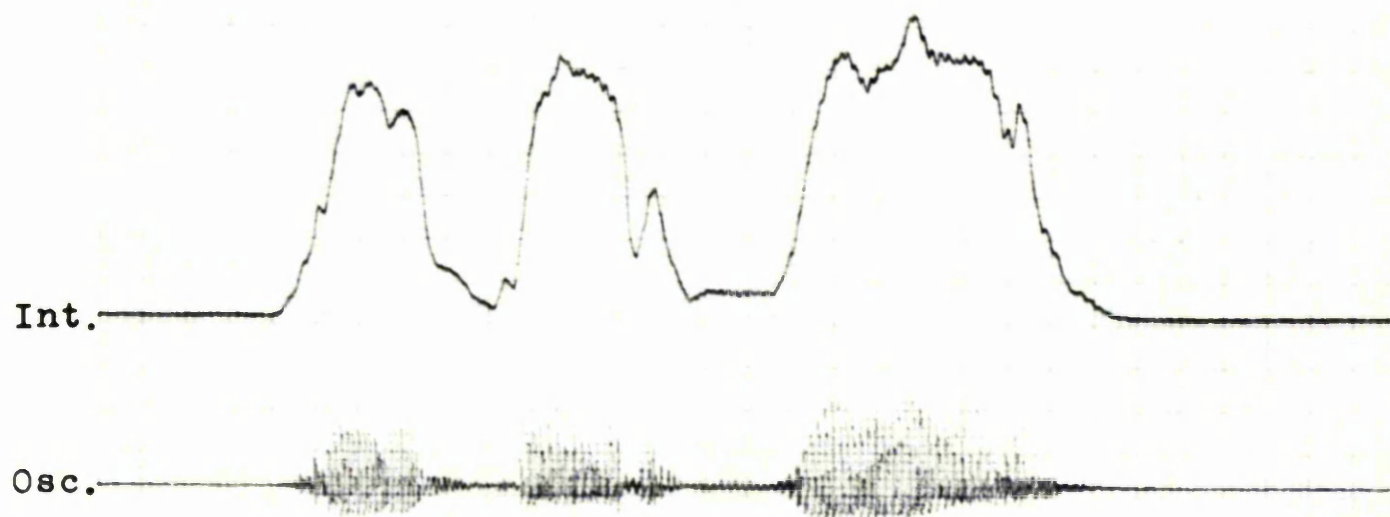
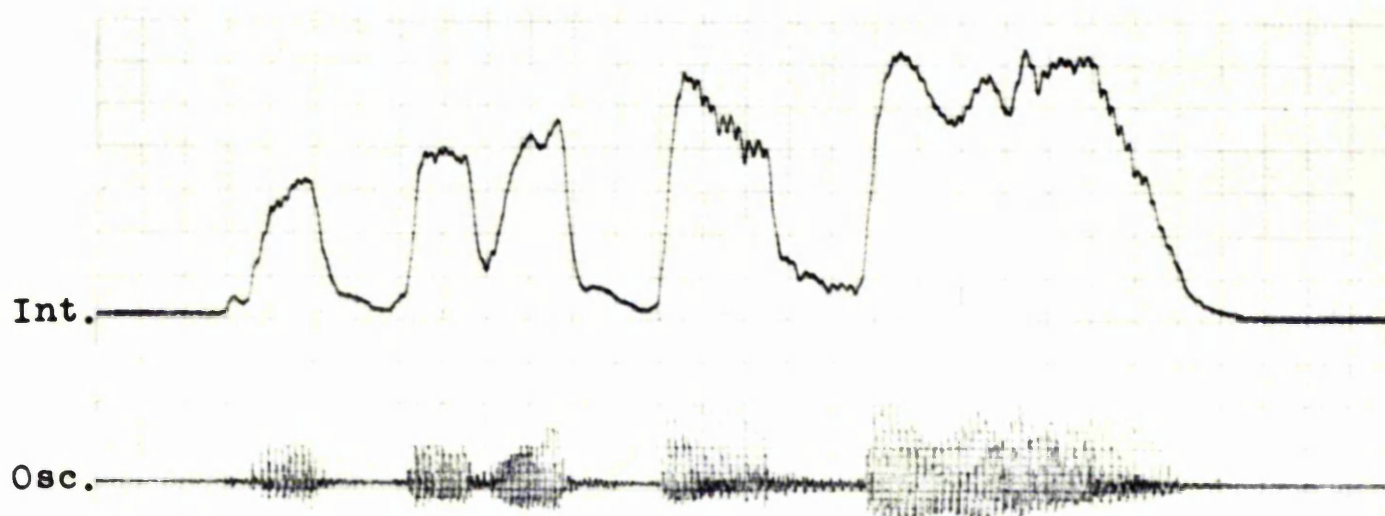


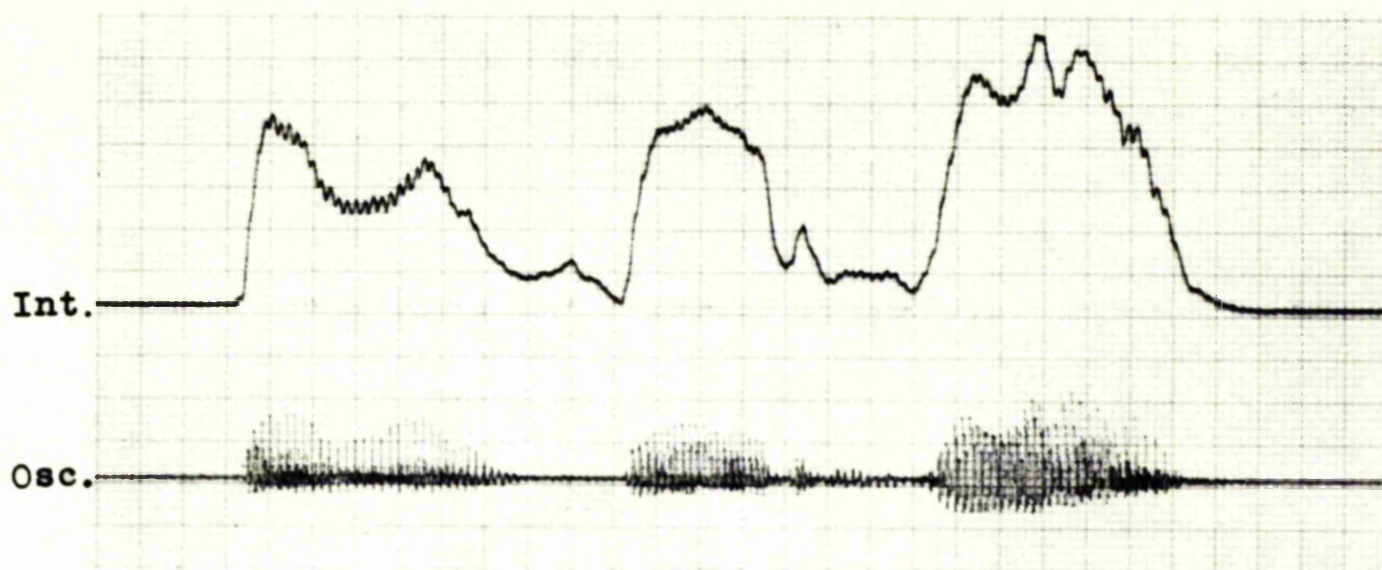
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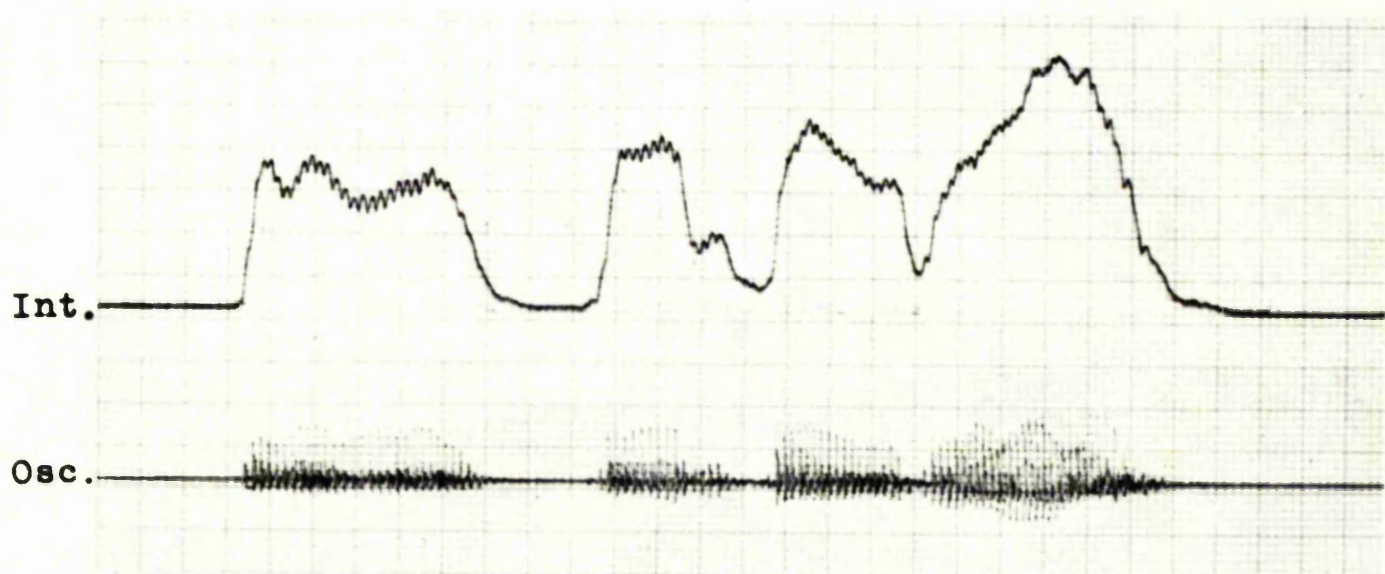
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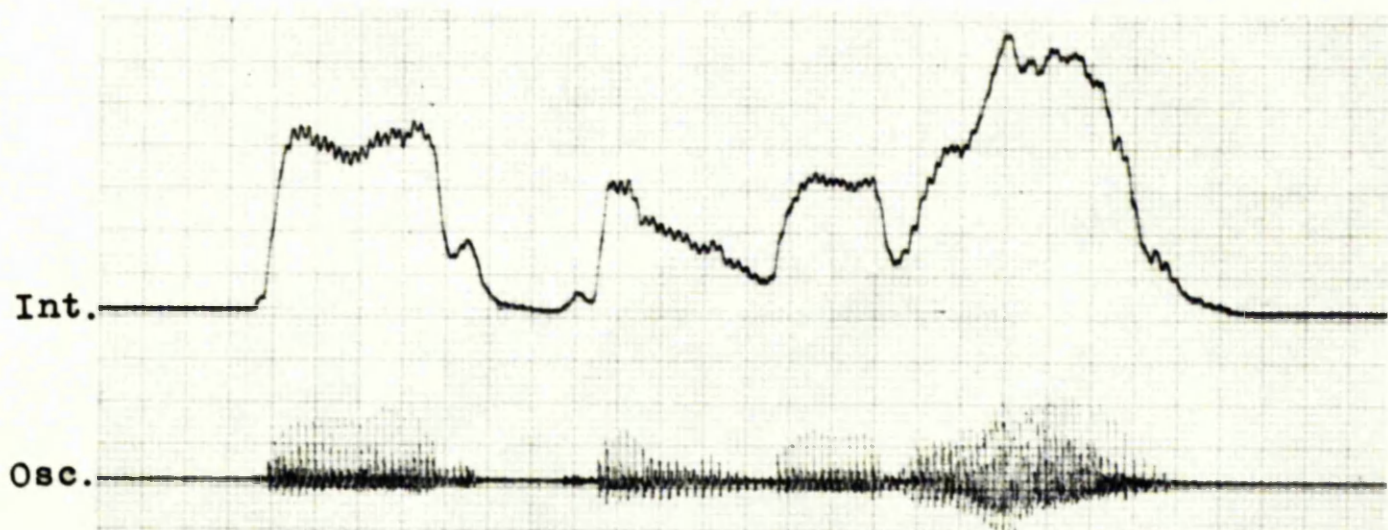




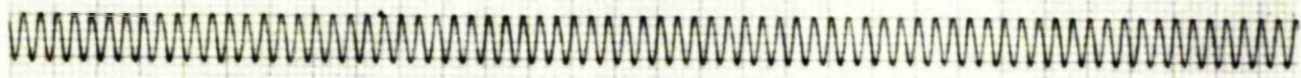
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23.

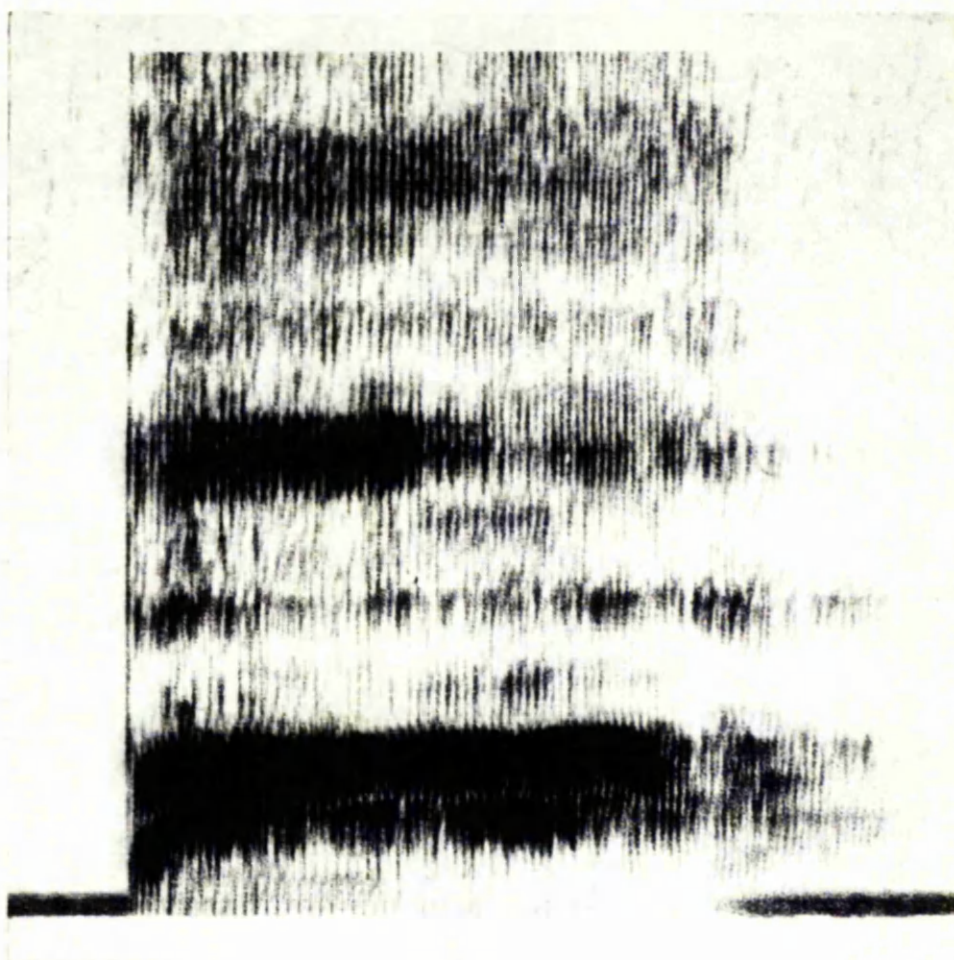


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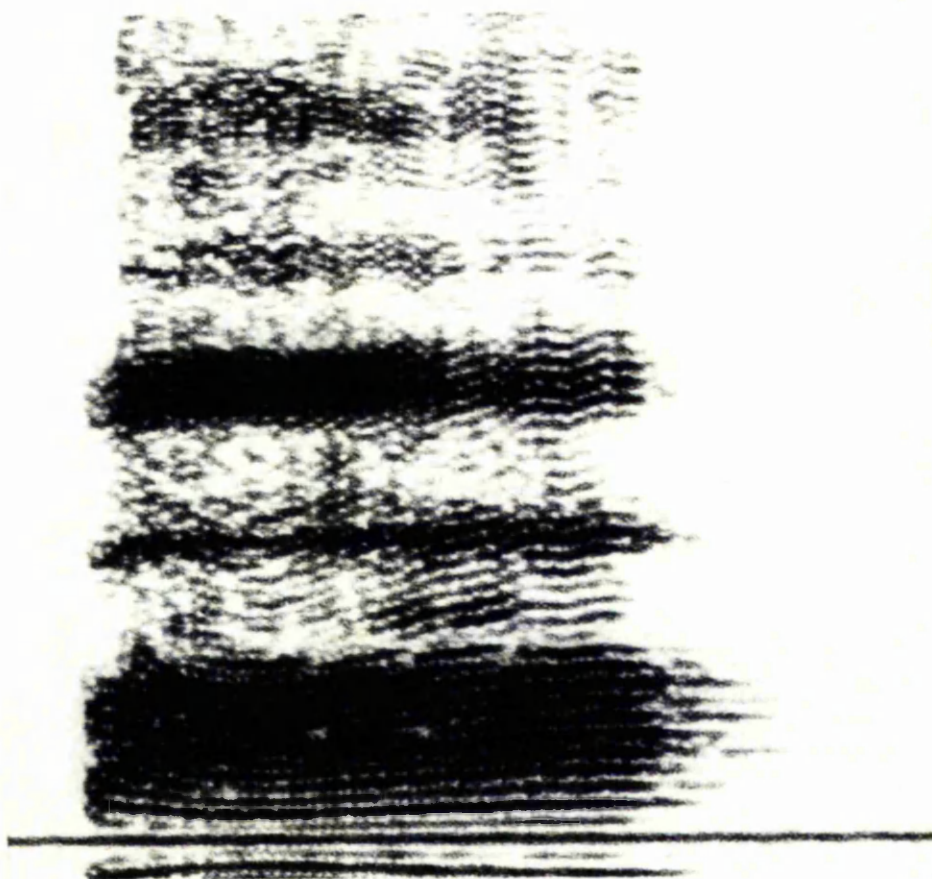


List of Spectrograms (Sgms):-

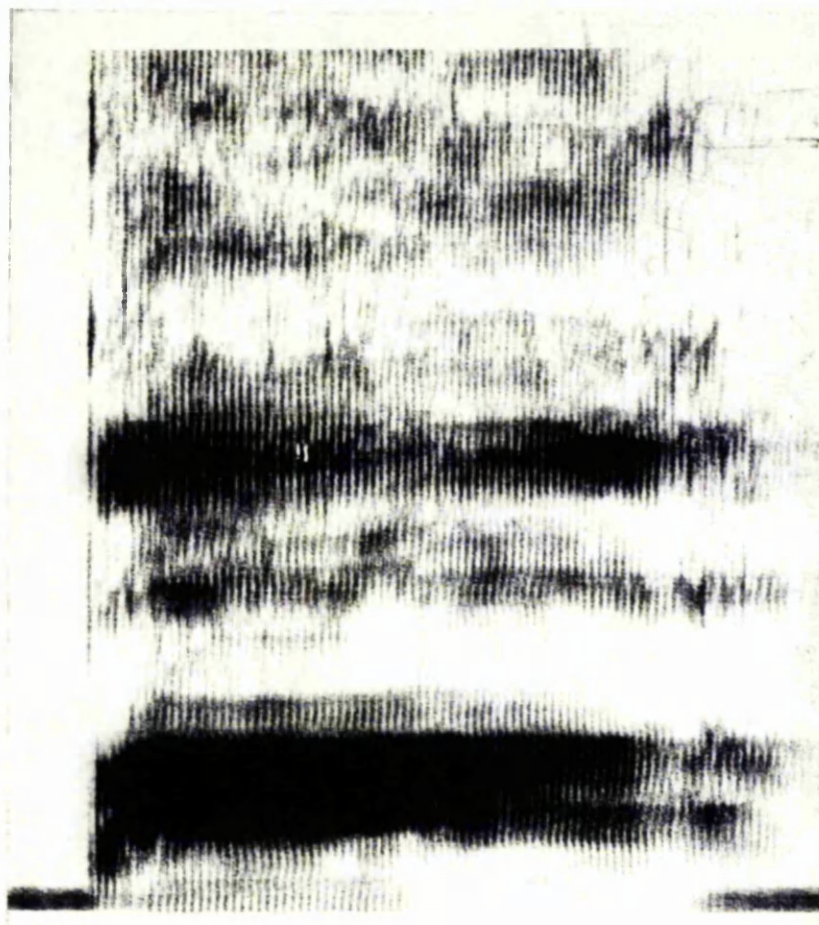
1.	'pa'	Tone-1	B. Band	(Brother)
2.	'pa'	Tone-1	N. Band	(Brother)
3.	'pa'	Tone-2	B. Band	(Put in)
4.	'pa'	Tone-2	N. Band	(Put in)
5.	'pa'	Tone-3	B. Band	(Tamper)
6.	'pa'	Tone-3	N. Band	(Tamper)
7.	'koṛa'	Tone-1	B. Band	(horse)
8.	'koṛa'	Tone-2	" "	(whip)
9.	'koṛa'	Tone-3	" "	(leper)
10.	'koṛa'.	Tone-1	" "	(It is a horse).
11.	'koṛa',	Tone-1	" "	(Horse, (cow, goat, etc.))
12.	'koṛa?'	Tone-1	" "	(Is it a horse?)



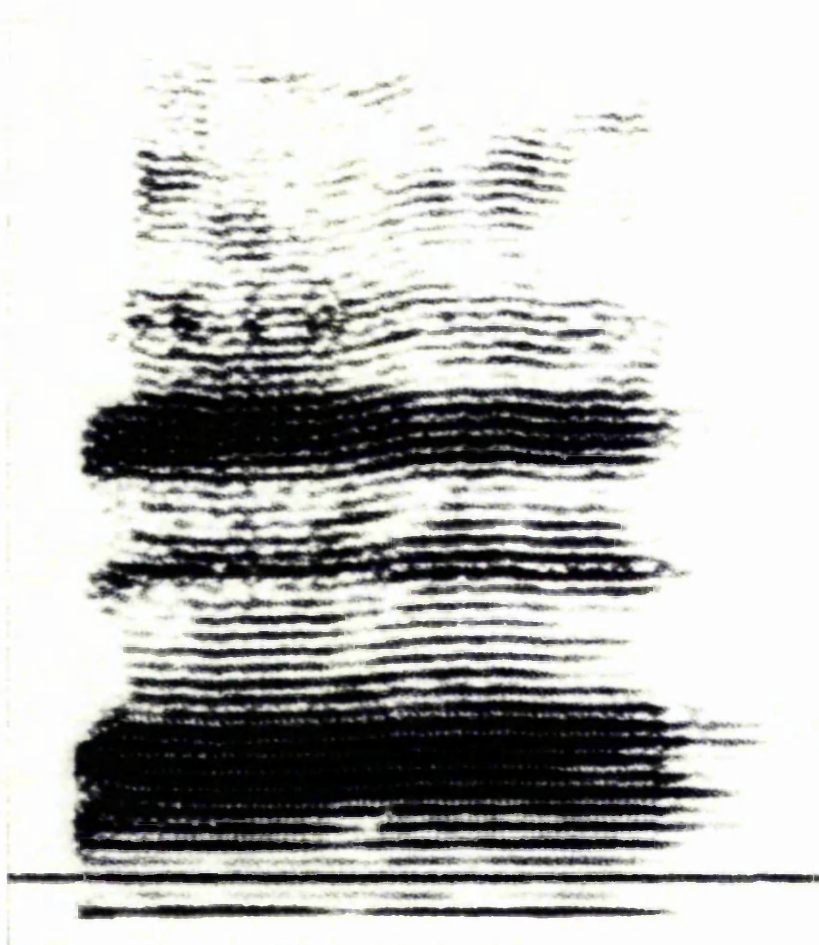
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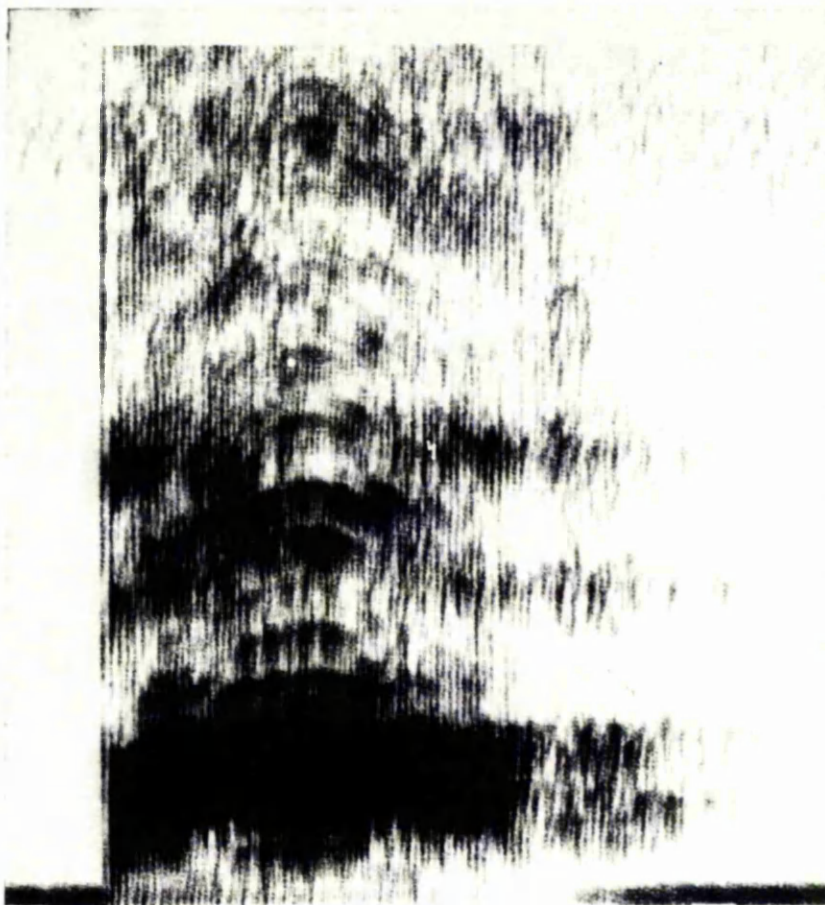
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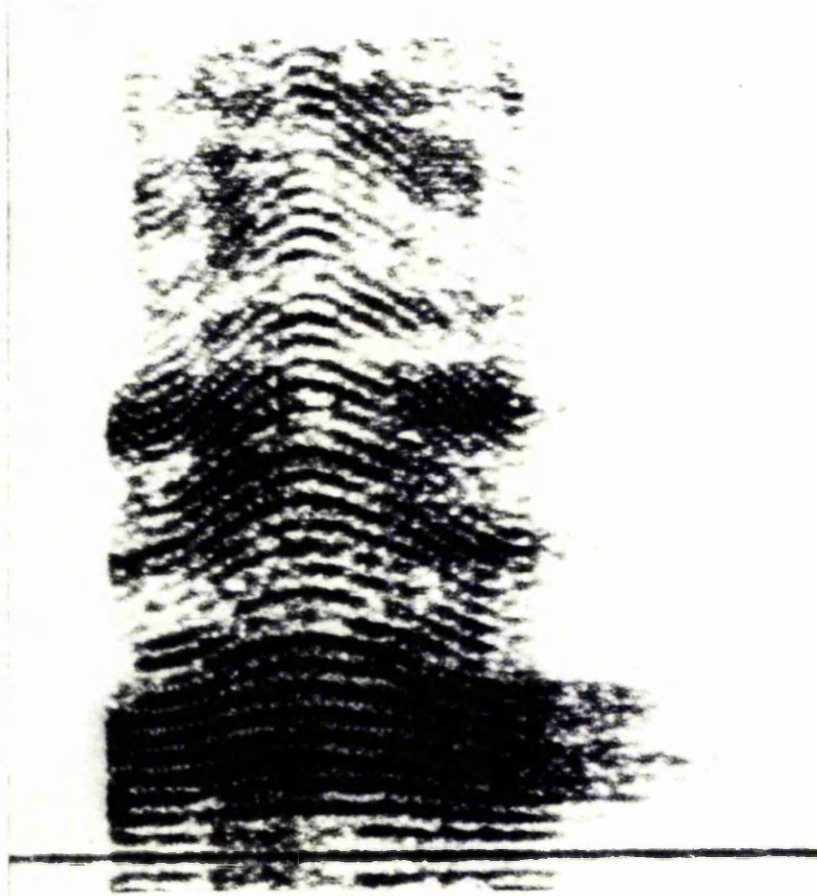
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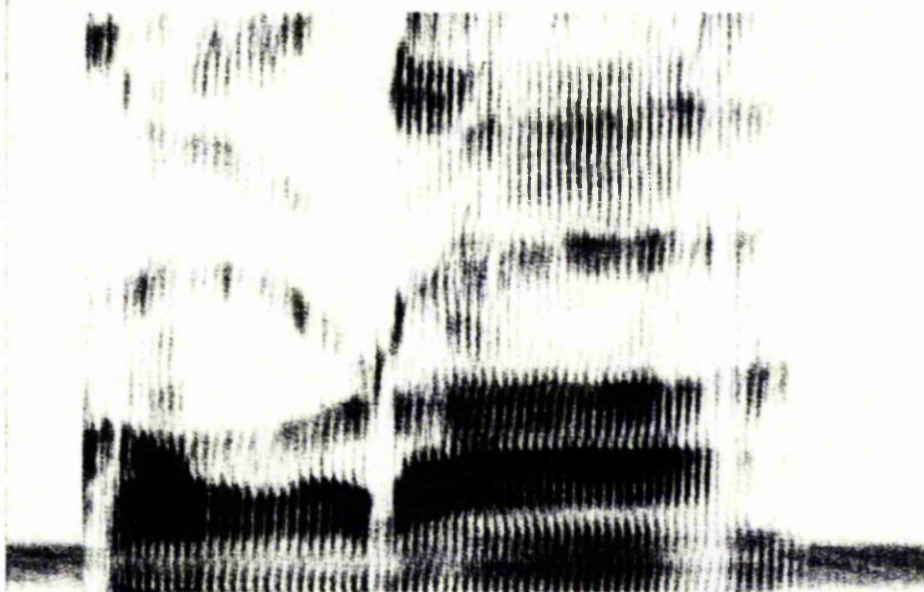
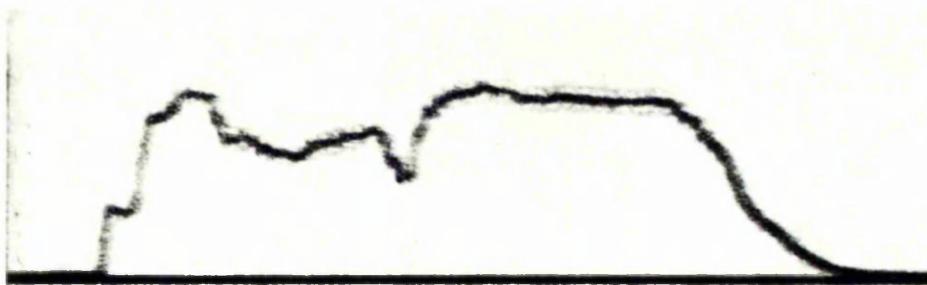
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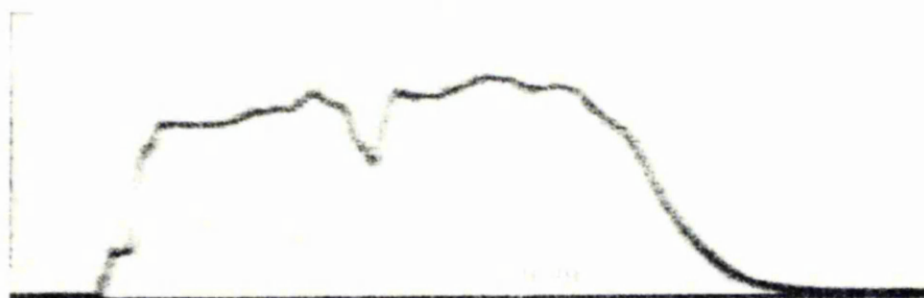
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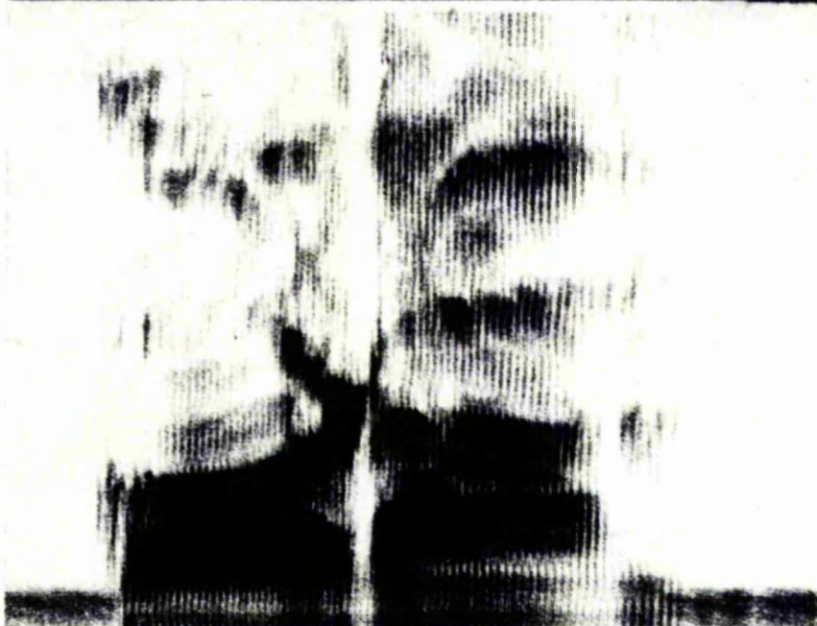
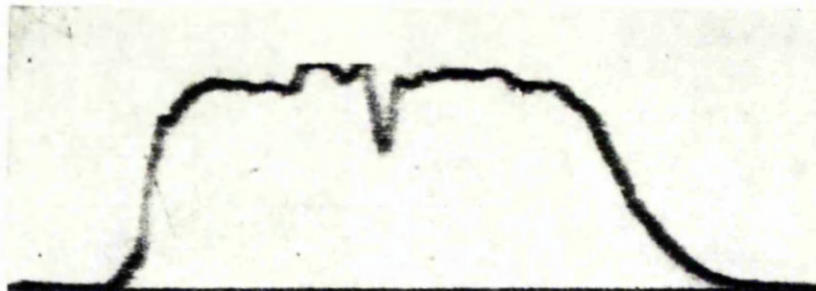
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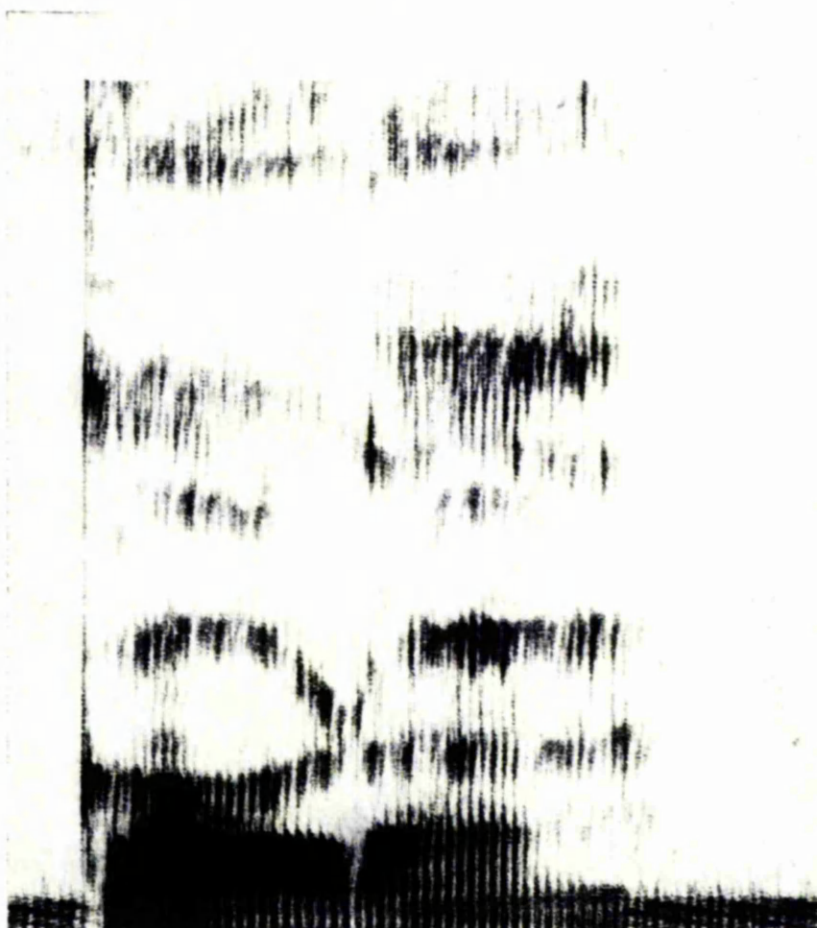
7.



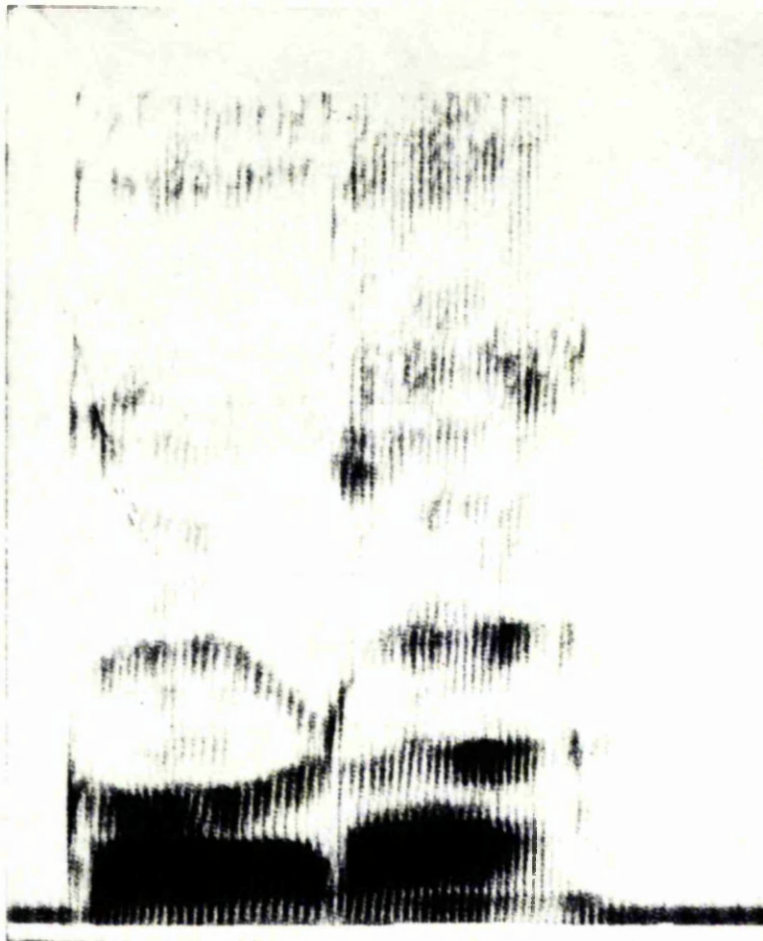
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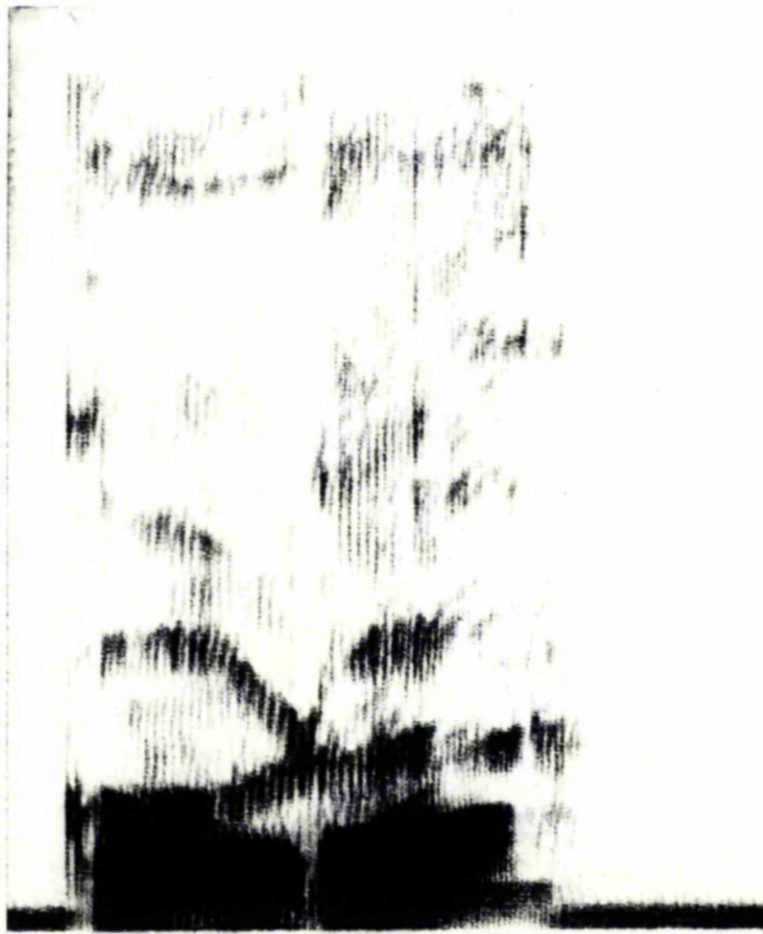
9.



10.



11.

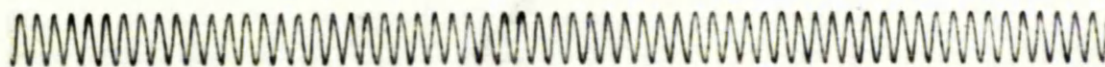


12.

List of Electro-Aerometer Readings (Amrs.):-

1.	'ca'	Tone-1	(I
2.	'ca'	Tone-2	
3.	'ca'	Tone-3	
4.	'na'	Tone-1	
5.	'nā'	Tone-2	
6.	'nā'	Tone-3	
7.	'koṛa'	Tone-1	(It is a horse)
7(a)	'koṛa?'	Tone-1	(Is it a horse?)
8.	'koṛa'	Tone-2	(It is a whip)
8(a)	'koṛa?'	Tone-2	(Is it a whip?)
9.	'koṛa'	Tone-3	(It is a leper)
9(a)	'koṛa?'	Tone-3	(Is it a leper?)

N.B. At the bottom of each page to follow the time
line scale represents 50 Hz ~~per second~~.



L.



4. N.



M.



L.



5. N.



M.



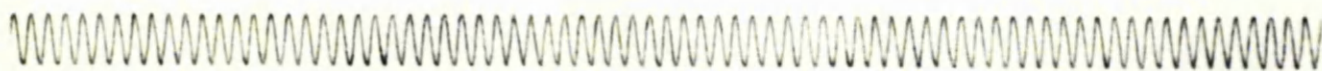
L.



6. N.



M.




L.



7. N.



M.





L.



7a. N.



M.



L.



8. N.



M.



L.



8a. N.



M.



L.



9.

N.



M.



L.



9a.

N.



M.

